

Railway Age

WITH WHICH IS INCORPORATED RAILWAY REVIEW

FIRST HALF OF 1928—No. 5

FEBRUARY 4, 1928

SEVENTY-THIRD YEAR

WHY

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B. & A. Train Passing Welleley, Mass.

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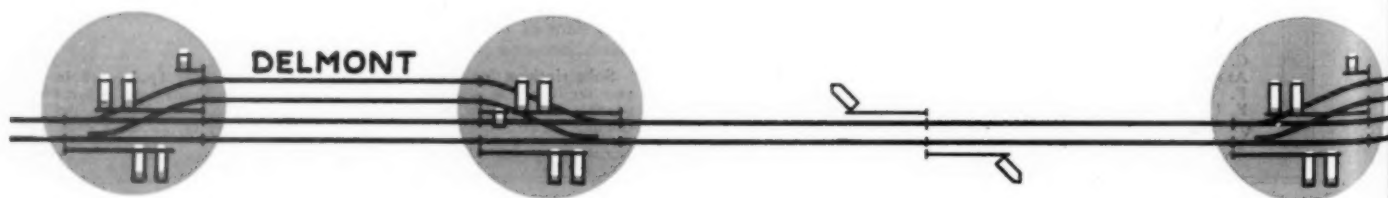
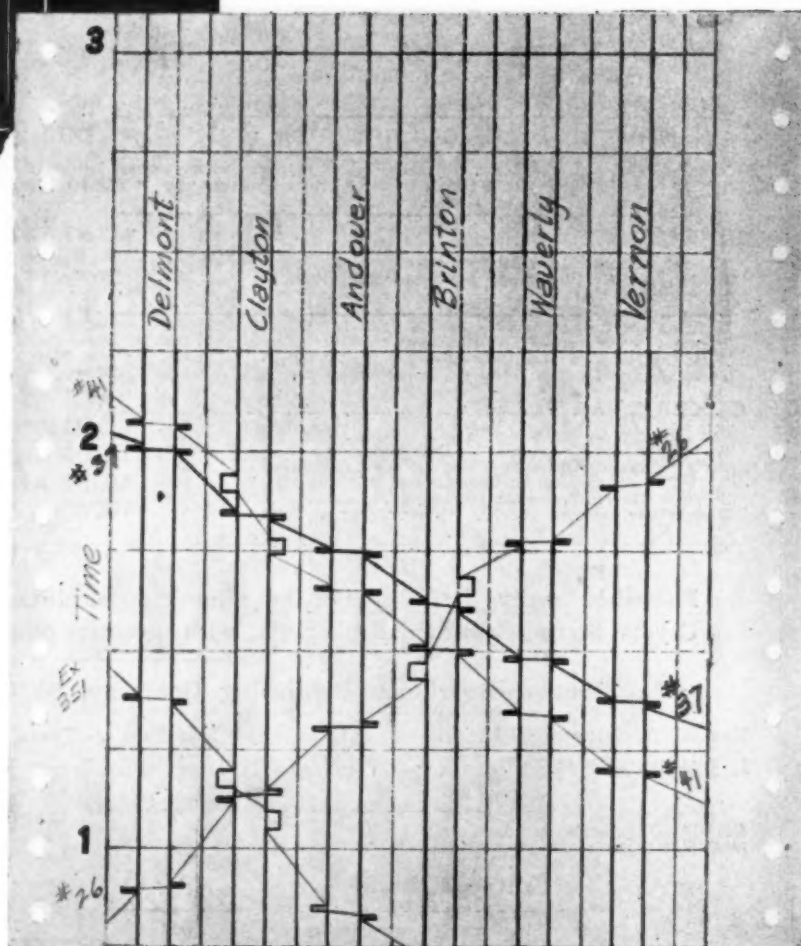
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Automatic



Each train "OS"es itself in when it enters and also "OS"es itself out when it leaves any of the track sections indicated in color. These "OS"es as well as the time are automatically recorded by the Train Graph. Additional "OS"ing points may be established wherever it is deemed necessary.

The dispatcher may connect the "OS" Recordings with light lines, as indicated on the chart if he desires to do so.



Railway Age

Vol. 84, No. 5

February 4, 1928

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The Pennsylvania Order for Passenger Cars

WHEN the Pennsylvania this last week placed orders for 613 passenger train cars, the railroad not only placed one of the largest passenger car orders on record, but it brought considerable cheer into the ranks of car builders and supply companies. Following a year when orders had been only fair, the placing of a third of such a year's business at the beginning of 1928 gave builders and supply men something more concretely comforting to think about than any talk of future prospects. The Pennsylvania order was well distributed throughout the industry, eight builders participating aside from those cars ordered in company shops. The equipment ordered was of a large variety of types and the Pennsylvania has announced that it would ask bids shortly on "a substantial number" of express refrigerator cars. At times in the past, the placing of large orders by the larger railroads has started a considerable buying movement, which is one of the interesting possibilities attendant on the Pennsylvania's announcement.

Motor Transport Regulation Becomes Active Issue

THE regulation of motor vehicle common carriers has been a consistently prominent issue during the last few years, but in 1928 it will unquestionably occupy an even larger area of the stage than usual. The first matter of major importance to be taken up is the report of Examiner Flynn on the Interstate Commerce Commission's motor transport investigation. This report has aroused widespread interest and discussion, and the inclusion of recommendations that both motor coach and motor truck common carriers operating across state boundary lines should be subjected to regulation should make the hearing on the report, to be held in Washington this month, one of national transportation interest. In addition, there are two bills now pending in Congress which provide for the regulation of interstate motor vehicle common carriers in ways more or less in accord with Examiner Flynn's proposals. One of these, the Denison bill, would regulate only interstate motor coach operations, while the other, the Parker bill, would regulate both motor coach and motor truck interstate operations. No hearings on these bills have yet been held but they are expected to begin shortly. Furthermore, the United States Supreme Court has before it for final decision the appeal of several independent motor coach operators in West Virginia from a decision of the Supreme Court of that state, which ordered the granting of certain contested certificates permitting coach operation to the Baltimore & Ohio, and laid down the principle that railways have a prior right to furnish highway service when it is required in terri-

tory served by their railway lines. By the end of this year, the regulatory atmosphere should be pretty well clarified.

Standardization of Lamps

INCANDESCENT lamps are one commodity which can, within limits, be standardized to the benefit of every one concerned. The large number used make it a matter of importance. Standard voltage rating of lamps with voltage properly adjusted to this rating, balances the cost of lamp renewals against the cost of power and gives the user his light for a minimum expenditure. Standardizing and reducing the number of types to a minimum means reducing the cost of handling lamps in the stores department and reducing cost of manufacture. In the past, the users have received at least a part of this latter saving in the form of reduced lamp prices. The most recent activity in this field has to do with locomotive cab lamps. Mazda lamp manufacturers plan in the future to furnish all cab lamps designed for operation on 34 volts. It is their intention to furnish 33-volt lamps only until the present stock is exhausted, after which only 34 volt lamps will be regularly supplied. In order to avoid confusion, it is suggested that all railroad customers correct their ordering data in accordance with this change. There is nothing dictatorial about this action on the part of the lamp manufacturers, as it simply follows the recommendations of the American Railway Association, Mechanical Division, and of the Association of Railway Electrical Engineers. These Associations recommend that the standard voltage for the 15 watt cab lamps be 34 volts; the increase from 33 to 34 having been found desirable due to the higher voltage and closer regulation necessary for automatic train control. It should also be said that in the case of cab lamps, candle power value is of secondary consideration to life performance and there should be no necessity for supplying two voltage ratings. It is therefore, to be hoped that all railroads will aid in minimizing unnecessary complication and expense by adhering to this standard.

Fewer Locomotive Defects Found Each Year

THE records show that, during the past few years, the great majority of the Class I railroads in the United States have made a steady and substantial decrease each year in the number of locomotives found defective and in the number ordered out of service under the federal inspection law. Credit for the best performance in this respect among roads owning 150 locomotives or more goes to the Wabash, on which in 1927 only six per cent of the locomotives inspected were

found defective and only two were ordered out of service. On this basis of comparison, the Delaware & Hudson holds second place and the Texas & Pacific third, followed in consecutive order by the Pittsburgh & Lake Erie, the Soo Line, the Missouri-Kansas-Texas and the Chicago, Milwaukee & St. Paul. A study of the records indicates that the favorable showings of these roads have not been accomplished by partiality in inspection, as in most cases at least twice as many locomotives were inspected as were owned, indicating that on the average each locomotive was inspected at least twice a year. Locomotive condition as regards federal defects should not be confused with the general standard of locomotive maintenance, it being entirely possible to maintain a locomotive in such a way that safe operation is assured, while lack of attention to details bearing directly on economy of operation causes an unsatisfactory performance in this respect. As the general standard of locomotive condition with regard to federal defects is raised, inspectors representing the Interstate Commerce Commission, Bureau of Locomotive Inspection, find it increasingly difficult to discover defects of major importance and in consequence tend to become too technical. In fact, some hard pressed mechanical officers feel that reasonable limits in this respect have already been reached if not surpassed in some cases. Irrespective of how much justification exists for this feeling, it cannot be denied that the locomotive inspection law and the generally fair way in which it has been administered are largely responsible for the present greatly improved condition of locomotives, from a safety standpoint. The railroads also have contributed substantially in bringing about this improvement, but a healthy competition in still further co-operating with the government officers to reduce the percentage of locomotives found with federal defects would be beneficial.

The Wayfarer's Responsibility at Grade Crossings

LOOK out for yourself at crossings. The education of the public seems to depend in a peculiar degree not only on the proper phrasing of the lesson and on seeing that it is promulgated by an authority that is respected, but also in large measure on finding the proper time or circumstance, or the suitable mental attitude on the part of the intended recipients of the instruction. Securing right receptivity is a necessary element. A few weeks ago the Supreme Court of the United States issued a decision emphasizing the duty of wayfarers approaching railroad crossings to look out for themselves; not to expect the locomotive to look out for the wayfarers. This has been the law for years; but by some subtle force in Justice Holmes' wording, or because of some other elusive element or condition, this decision was treated as news; the press and people generally at once sat up and took notice; paid attention to a law that had been before them all the time. Now another principle of law, which was already pretty well settled, appears in the newspapers as something new; the rule that a passenger in an automobile has a duty to look out for his own safety at a crossing; not trusting too much to the driver. If he sues the railroad for bodily injury the road can defend itself on the ground of contributory negligence just the same as though the man were himself the driver. This is in a decision by the United States Circuit Court of Appeals, Eighth Circuit. For some reason or other the point

now receives the intelligent attention for which it has long waited. In this connection a peculiarity of the law in Massachusetts has recently come to notice through a bill presented in the legislature by Senator Simoneau, calling for modification of the law under which a railroad may relieve itself of damages, where sued by a person who drives in front of a train, by showing that the plaintiff was himself chargeable with "gross or wilful" negligence. Mr. Simoneau very reasonably asks that those two adjectives be cut out. To punish for "wilful negligence" Massachusetts would need to have jurists like the Dutch justice, who is said to have imposed a fine of ten dollars on old Peter Duykens, notwithstanding a lack of proof of the alleged offense, because "it was so much like him!" The word "wilful" was, no doubt, put into the Massachusetts law on motion of some member who, by inserting such an amendment, designed to weaken it.

Taxpayer or Shipper— Who Should Pay the Bill?

RAILROAD men need to be constantly on the alert for misleading statements of waterway enthusiasts. This does not imply any dishonesty on the part of advocates of waterway extension, but the fact is that much of the favor which waterway development enjoys comes from a misconception—a misconception which friends of the railroads should seek every occasion to correct. This misconception is the common one of looking upon the *waterway rate* as the total cost of the service, without including the costs of building and maintaining the waterways which are met by taxation. The total cost to the public, considered as taxpayers as well as consumers, of a ton-mile shipped by waterway is the charge of the carrier plus a pro rata share of the taxes. Thus, on the New York state barge canal in 1925, as pointed out in an article in the *Railway Age* of December 24, the average rate was 0.45 cents per ton-mile, whereas the average cost to the public was 2.533 cents per ton-mile, after taxes had been included. Even if the canal were handling a maximum traffic, it was pointed out, the taxes being spread out thereby over a greater number of ton-miles, the cost would have been 1.499 cents per ton-mile—a figure which must be compared with 1.108 cents per ton-mile, the average cost of moving freight by rail in the Eastern district in the same year. The railroads cannot claim business which can be more economically handled by other transportation agencies, but as taxpayers they have a right to insist that the whole truth regarding waterway transportation costs be known. Some interests seem to favor waterways because by having them constructed and maintained out of public funds it is possible to shift a large share of transportation costs to the taxpayer, whereas by railroad the purchaser of transportation is forced to pay for it all himself. E. E. Loomis, president of the Lehigh Valley, in a recent article in the *Yale Daily News* asks why, if the government is bent on supplying cheap transportation to shippers, it does not be modern and build a railroad rather than a waterway—that at least would save the taxpayers something. The questions the waterway enthusiast ought to answer are: What will the *total* cost of transportation be with the proposed improvement? Why should the taxpayer, rather than the user of transportation, be expected to bear the bulk of the cost?

What the Railways Have Earned

THE railroads and the Interstate Commerce Commission differ regarding the basis on which the railroads should be allowed to earn a "fair return". The railroads contend that if the rates they may charge and the net return they may earn are to be based on a valuation, weight should be given the probable present cost of reproducing railway properties in arriving at the valuation. The commission believes that the "rate base" should be virtually the "prudent investment," as nearly as it can be estimated. Would the commission let the railways earn a "fair return" even on a "prudent investment" valuation if it were accepted? Experience does not so indicate.

The commission made a "tentative valuation" of the railways as of January 1, 1920. It has indicated that the proper way to bring this tentative valuation up-to-date is to add to it the net increase that has occurred in the investment in the railways since the date mentioned. Statistics given in the commission's recently published annual report for 1927 show that the net increase in the investment in road and equipment from January 1, 1920, to January 1, 1927,—allowing for retirements of property—was \$4,097,985,004. Its tentative valuation for January 1, 1920, was \$18,900,000,000. From this it would appear that the commission's "tentative valuation" on January 1, 1927, if it had announced one, would have been \$22,997,985,004. What percentage of return did the roads earn last year on this basis? The exact amount of net operating income earned by them is not now available and will not be for some months. The net operating income earned by the Class I roads in the first 11 months of 1927 year indicates, however, that the net operating income of all roads last year was approximately \$1,090,000,000, which would be 4.74 per cent on the "tentative valuation" at the beginning of the year.

Return on the Tentative Valuation

Various estimates have been made of the percentage of return earned on the tentative valuation in 1926, and most of these have indicated that it was approximately what the commission has held would be a "fair return," or, for the roads as a whole, $5\frac{3}{4}$ per cent. The commission's own statistics, as recently published in its annual report in 1927, do not sustain this conclusion. In the accompanying table the tentative valuation given for 1926 is for the beginning of the year and therefore does not include the investment made during the year. The percentage of return shown in the table for the railways as a whole in 1926 is $5\frac{1}{2}$ per cent. If the computation be made by applying the net operating income of 1926 to the tentative valuation at the end of that year—or, which is the same thing, at the beginning of 1927—the return indicated on the tentative valuation becomes only 5.33 per cent.

In order to use only the commission's own figures, or figures strictly based upon them, we have, throughout the accompanying table, used as the basis of calculating the return earned in each year the commission's tentative valuation for January 1, 1920, plus the net increase in the investment to the beginning of the year. To illustrate, the tentative valuation given for 1921 is the commission's tentative valuation for January 1, 1920, plus only the net increase in the investment to January 1, 1921. Therefore, for each year the percentage of return shown as earned is larger than it would be if the

calculation were based on the tentative valuation at the end of the year.

It will be seen that, calculating in this way, the return earned on the commission's tentative valuation by the roads as a whole has ranged from a minimum of about 3 per cent in 1921 to a maximum of $5\frac{1}{2}$ per cent in 1926, and during the last seven years has averaged only 4.60 per cent. It will also be seen that in 1927 it was less than in either 1923, 1925 or 1926.

The provisions of the Transportation Act imposed upon the railways the duty of honest, efficient and economical operation and of providing the public, if possible, with adequate transportation service. The railways have "made good" in the performance of these duties.

The same provisions imposed upon the Interstate Commerce Commission the duty of determining what would be a fair return for the railways to be allowed

Return Earned on "Tentative" Valuation

Year	Tentative valuation	Net railway operating income	Return
1921	\$19,449,199,229	\$601,138,916	3.09%
1922	19,929,102,886	769,411,093	3.86
1923	20,180,047,552	974,917,715	4.83
1924	20,972,737,444	984,463,481	4.69
1925	21,782,146,668	1,136,728,016	5.22
1926	22,336,872,337	1,229,000,465	5.50
1927	22,997,985,004	\$1,090,000,000	4.74

a Estimated.

to earn, and of so adjusting rates as to enable them, "as nearly as may be," to earn this return. In 1922 the commission held that $5\frac{3}{4}$ per cent on its tentative valuation would be a fair return, and it has never since held otherwise. The statistics given in the accompanying table show conclusively that the commission has not "made good." Not only has it not so adjusted the rates that the railways could earn $5\frac{3}{4}$ per cent on its own tentative valuation as an annual average, but it has not so adjusted them that this could be earned any year. On its own basis of valuation a fair average annual net operating income for the seven years would have been almost \$1,221,000,000. The average actually earned was about \$969,000,000, or almost \$252,000,000 less; and in 1927 the railways failed by more than \$230,000,000 to earn $5\frac{3}{4}$ per cent on the tentative valuation, this being the largest shortage that has been incurred since 1922.

It cannot be said that these results have been due to conditions over which the commission has had no control or to developments that it could not have foreseen. Prevailing tendencies in the railroad industry have been plain and unmistakable. When the railways were unable, even in years of record-breaking traffic such as 1925 and 1926, to earn the prescribed return it was obvious that they would fall far short of it when the first recession of business occurred. Efforts made, especially by the western roads, to secure needed advances in rates were, however, unavailing. Despite the decline in net operating income in 1927 the commission still continues to order reductions of rates and to fail to make compensating advances.

Good Performance in Spite of Regulation

The commission not only can, but does, point to the record of performance of the railways as a vindication of the policy of regulation it has followed. Although it has persistently failed and refused to let them earn the return it has held would be reasonable and fair, they have invested large amounts in the improvement and expansion of their properties and for five years have rendered better service than ever before. How have they got the money they have invested? Almost entirely, first, by increasing their indebtedness, and, secondly, by

investing earnings that belonged to the stockholders, while paying the stockholders dividends which have averaged less than \$5 a share on their stock and about 3 per cent on the stockholders' equity in the properties. The improvement in service that has occurred has been due to the investment made, to a new kind of cooperation between the shippers and the railways, and to unprecedented efforts by railway managements to serve the public with the greatest possible efficiency and economy.

In large part the changes in business conditions which have resulted in abundance of capital seeking investment, low rates of interest and high security prices have been due to the improvement in railway service. That the advance that has occurred in the prices of the stocks of most railways has been due more to the decline in the prevailing rate of interest than to improvements in railway financial results, is demonstrated by the fact that the percentage of return earned by the railways in 1927 on the commission's tentative valuation was less than in 1923; and yet this advance in security prices is used by the defenders of the commission's policy of regulation as an argument to show that that policy has been sound, although the advance in security prices could not have been foreseen by the commission and was not due to its policy. The public owes much to the owners and managers of the railways for the contribution to national progress and prosperity they have made during the last seven years. It owes nothing to the Interstate Commerce Commission for the policy of regulation it has followed because, excepting for the public-spirited sacrifices and efforts of railway owners and managers, the improvement in transportation conditions that has occurred would have been prevented by the policy of regulation followed.

A New Period

Railway financial results in 1927 show that in 1926 the railways ended a period in their history and in 1927 entered a new period. From 1921 to 1926, in spite of the kind of regulation they received, they were steadily recovering their earning capacity. In 1927, although the freight business handled was larger than in any previous year excepting 1926, there was a sharp decline in the percentage of return earned. This was due to tendencies which had been in operation for some years but which were somewhat obscured by the effects of the increase of freight business. It is now plain that unless advances in wages are arrested and a more reasonable policy is adopted in the regulation of rates the time will be indefinitely postponed when the railways will be able to earn even on the commission's tentative valuation the average return of $5\frac{3}{4}$ per cent which it has held would be fair.

The commission's tentative valuation undoubtedly is much less than would be a valuation made in accordance with what has heretofore been understood to be the law upon the subject. Therefore, there can be no reasonable defense offered for the commission persisting in using as a basis for regulation a valuation which gives no recognition to present day costs, and in addition so regulating rates as to prevent the roads year after year from earning a fair return even on its own basis. Such a policy indicates disregard for the rights of railway stockholders and of the rewards due to efficient management, ignorance of what is necessary to enable the railways to continue to render good service, or incompetence of the commission as a rate-regulating body. The public has no right to demand, and no reason based on past experience to expect, that railway

owners and managers shall continue to "make good" if the public's government, in its regulation of railways, is to continue, as it has for seven years, to fail to carry out the solemn assurances given by Congress and the Interstate Commerce Commission that the rendering of efficient, economical and adequate service by the railways would be rewarded by corresponding regulation of railway rates and net return.

The Railways' Interest in Forest Conservation

THE railways should take a keen interest in the conservation of our forest resources. In the first place, forest products constitute one of the largest sources of traffic and are worthy of attention from this standpoint. If for no other reason, the railways are warranted in furthering every worthy movement for the conservation and development of our forests in order to perpetuate a traffic of large volume.

But the forests are also of interest to the roads because of the extent to which they enter into the construction of railway facilities. The wooden cross tie has been a basic unit of track construction since the beginning of the railroads; the wooden stringer, cap and tie, and to a large extent the pile, are essentials in bridge construction. Wood plays an equally important part in buildings, large and small. Likewise, it has long been a basic material in car construction. In brief, it is a material of such universal use on the railways, that without it the most drastic changes in construction practices would be necessary. The railways make the largest single organized demand on forest products, consuming over 15 per cent of the entire output of the forests by direct purchase and probably 25 per cent of the entire production, if all purchases, direct and indirect, are considered.

Because of these intimate relationships the railways have a direct interest in the development of scientific measures to conserve the timber now standing, by eliminating wastes in cutting and by curbing the ravages of insects, blights and fire, as well as by intelligent reforestation of cut-over areas. Much work has already been done in this direction, largely under the direction of governmental agencies. This work is, however, in its infancy and is seriously lacking in many respects due to limited appropriations and restriction of activities.

An effort is now being made to correct the condition by broadening the work of governmental agencies and by increasing the appropriations therefor. For this purpose, a bill has been introduced in Congress by Representative McSweeney, known as H. R. 6091, and by Senator McNary, known as S. 1183, which substitutes for the fluctuating annual appropriations which now prevail, a ten-year program which will stabilize effort and increase and stimulate results by reason of more consistent measures. This bill provides for an increase in the work of the forest experiment stations. It includes additional appropriations for studies of injurious insects and tree diseases such as the chestnut blight, which has practically eliminated this timber as a source of further pole supply for the railways. It provides for increased study of the utilization of forest products in the Forest Products Laboratory at Madison, Wis. In brief, it contemplates a well rounded program of study of forest utilization problems over a sufficient period of time to enable maximum results to be secured. As such, it warrants the support of the railways.

Car Retarders at Mechanicville

*Boston & Maine installs G. R. S. System in eastbound yard
—Ten retarders serve 36 tracks*

THE latest refinements in car retarder apparatus are now to be found at Mechanicville, N. Y., on the Boston & Maine, near the western terminus of the Fitchburg-Berkshire division of that road, where a new eastbound hump freight yard was opened on January 14. George Hannauer, president of the road, and formerly vice-president of the Indiana Harbor Belt, where he developed the car retarder, entertained, on the occasion of the opening, a large party of visitors.

The layout of this yard differs in many features, not only from the former hump layout at this place, but also

receiving yard to permit engines to run around the hump if more than one engine is being used, or to pull back cars that have to be reclassified. From the receiving yard to the "hump crest" the distance is about 2300 ft., with independent leads for switching both the transfer and the repair tracks.

Description of Yard

The leading features of this yard are:

Receiving yard	10 tracks	737 cars
Classification yard	36 tracks	1,930 cars
Transfer shed	7 tracks	237 cars
Repair sheds	6 tracks	240 cars
Stock pens		
Ice house—(10,000 tons)		
Engine terminal—25 stalls		

Trains are made up on the classification tracks, and four doubling over leads are provided at the outgoing end of the yard in addition to the two ladders, each serving approximately six tracks. Practically all trains carry more than one classification, so that by assigning classifications that ordinarily go together to the same group, six trains can be made up at one time without interfering with each other. This arrangement eliminates the pulling down of cars to a departure yard and permits doubling of trains by road crews; cars can be humped closer to departure time of trains, and it allows the doubling together and caboosing of trains by the humper.

Ladder Arrangement. To obtain high switching capacity it is essential that there be a quick separation of cars on to many diverging routes, with a minimum of travel to the clearance point on each classification track; and this minimizes the difficulties incident to different rolling qualities of different types and weights of cars. The compact layout of switches and retarders at Mechanicville has been obtained, it will be seen, by a liberal use of lap switches. At the "junction switch," a lap switch 126 ft. from the crest of the hump, the traffic is diverted to three routes. The group switches where each of these routes is again divided are 189 ft. beyond the junction switch. The cars are thus sent over six diverging routes only 315 ft. from the hump crest; and the maximum distance from the junction switch to the

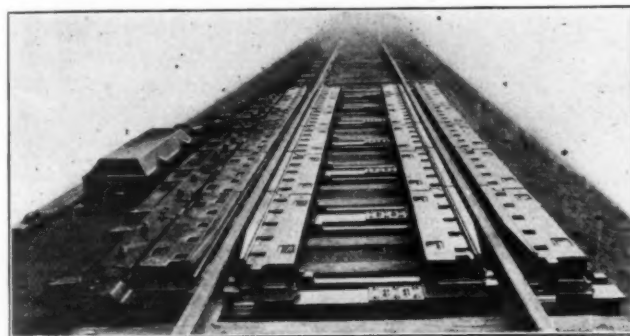


Fig. 1.—G. R. S. Car Retarder

Springs covered with heavy iron castings

from other yards previously equipped with car retarders. The principal difference is in the arrangement of ladders, whereby each group of six tracks is served by one group of retarders, the yard having 36 classification tracks. Each group of six is served by a ladder upon which there is a double retarder 80 ft. 8 in. in length, which brings the cars to their final yard speed for all of the tracks in that group. There is a thoroughfare track from the receiving yard to the outgoing end of the classification yard and from this track the stock pens, ice house, repair tracks, locomotive shop and engine terminal are served. There are also run-around tracks from both sides of the classification yard to the



Fig. 2.—Car Retarders at Mechanicville; Looking East From Hump

Retarder No. 1 in the foreground. Two-story power house and tower on the right, beyond the second retarder. Tower B in left center.

most distant classification-track switch is 595 feet.

The Grades

As the rate of acceleration decreases as the speed increases, and the braking power required to stop a car increases in proportion to the square of the speed, grades were carefully calculated so that cars never need move at high speeds.

Mechanicville has a natural descending grade from the entrance of the receiving yard to the outgoing end of the classification yard. The hump is simply a small knoll (about a foot above the grade of the lead) to get the slack on the pin. The hump incline drops about 2 ft. in 50 ft. (4 per cent) which separates the cars sufficiently for throwing switches conveniently between cuts. From the foot of the hump there is 75 ft. of 2 per cent grade to the junction switch and in this 75 ft. are the two 33 ft. retarder units. From the junction switch to the clearance point on each of the six group ladders there is 290 ft. of 1.2 per cent grade, with a 40 ft. 4 in. retarder in the rear of each of the three group switches, as shown.

At the clearance point on each of the six group ladders there are two 40 ft. 4 in. retarder units on a grade of 0.8 per cent, which is sufficient to start the average car which might be stopped in the retarder. Here the cars are brought to proper yard speed (about 4 m.p.h.) and this is the last point of retardation. From this point to the clearance point on each classification track the grade is 0.35 per cent while the body of the yard is 0.25 per cent.

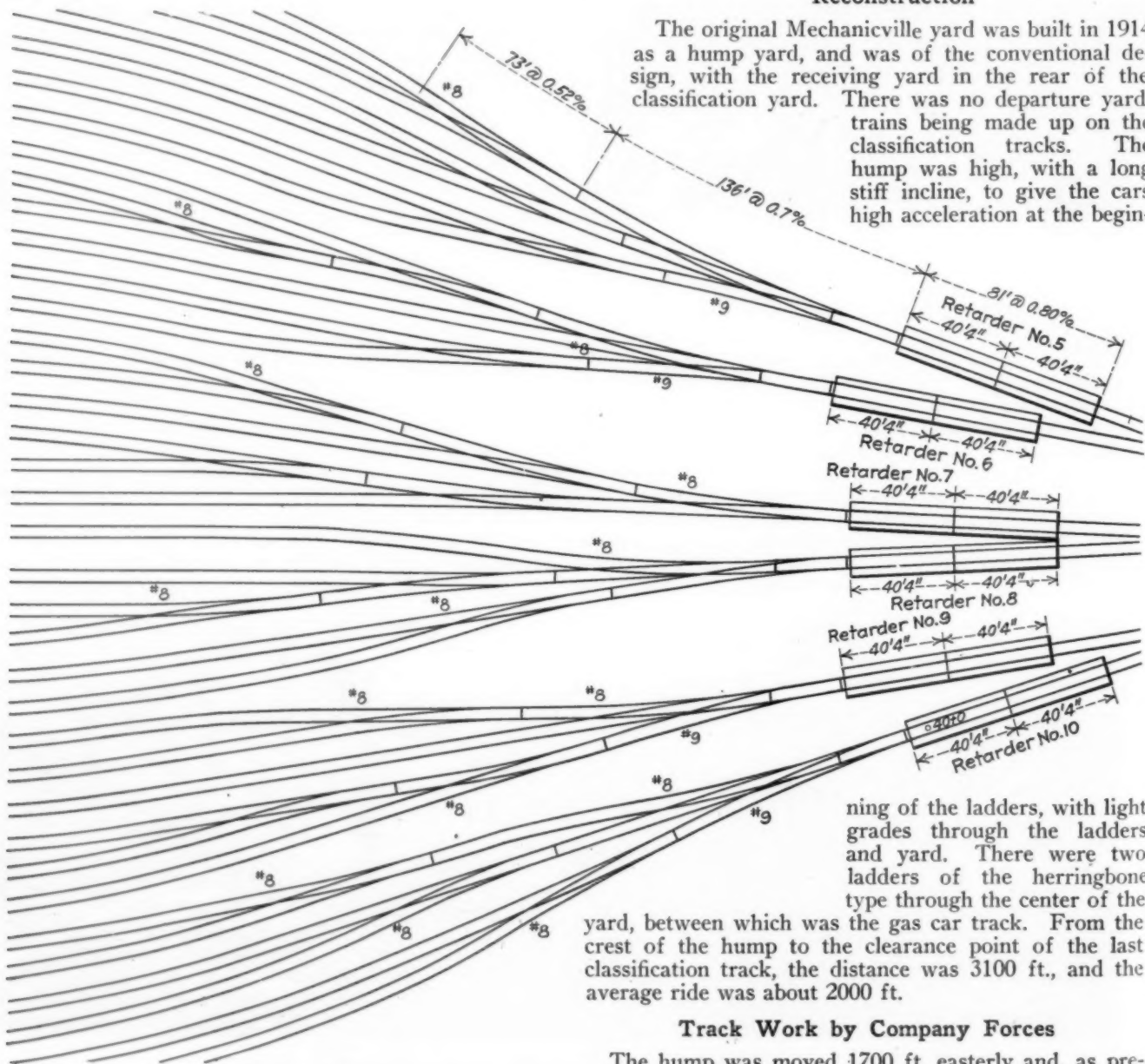
These grades are sufficient to carry an empty car at a speed of about six miles an hour to the last retarder; while the incline and group ladder retarders control the speed of the heavier or easier rolling cars. All grades are compensated three 100ths per degree of curve to offset curve friction.

That the layout will constitute a fast switching machine has already been shown during its first month in service.

With the operators still new, a speed of 250 cars an hour has been reached on individual trains; and a speed of three cars a minute is normal.

Reconstruction

The original Mechanicville yard was built in 1914 as a hump yard, and was of the conventional design, with the receiving yard in the rear of the classification yard. There was no departure yard, trains being made up on the classification tracks. The hump was high, with a long stiff incline, to give the cars high acceleration at the begin-



Eastbound Classification Yard at Mechanicville, N. Y.

Thirty-six tracks, six ladders, ten sets of retarders.

ning of the ladders, with light grades through the ladders and yard. There were two ladders of the herringbone type through the center of the yard, between which was the gas car track. From the crest of the hump to the clearance point of the last classification track, the distance was 3100 ft., and the average ride was about 2000 ft.

Track Work by Company Forces

The hump was moved 1700 ft. easterly and, as previously described, the yard was divided into six groups of six tracks, each served by a group ladder. The track

and grade work was done entirely by railroad forces and operations were carried on in sections to minimize interference with operation. Throughout the period of reconstruction all yard work was performed as usual and at no time were other yards called upon to relieve the Mechanicville yard. Work was started June 1, and

ly 35 riders, a motor car, and three engines had been necessary.

This was largely due to the shortened "ride," as the riders after bringing the car down to the proper speed at the clearance point on the classification tracks left the car and returned to the hump. This three months'

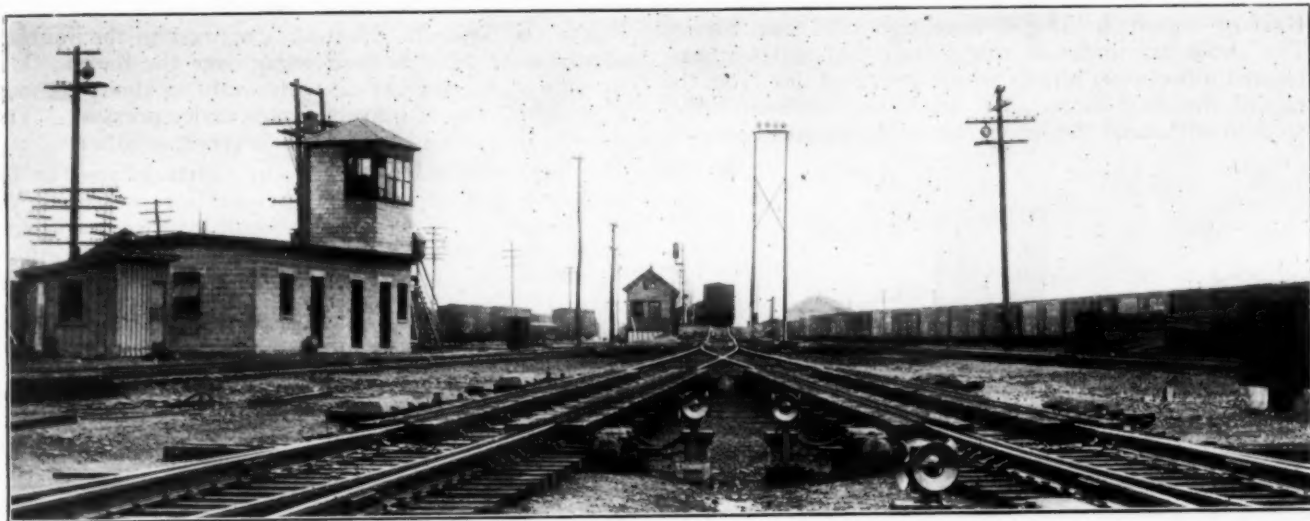


Fig. 3.—Mechanicville Yard, Boston & Maine; Looking West Toward Hump

Retarders No. 7 and No. 8 in foreground; Power house and Tower A at the left

on August 20, the new hump and about two-thirds of the track changes were completed; and the entire grading and track changes were completed September 15.

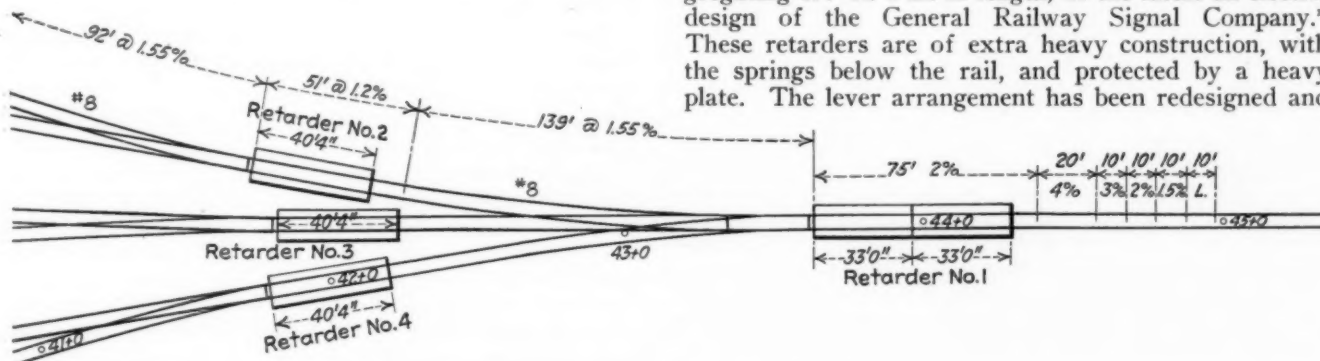
Operation

For about three months after the track and grade changes were completed operation was continued with

operation showed that the economies to be obtained by the revised grade and ladder arrangement, amounted to about 26 per cent per annum on the gross cost of the changes in tracks and grades.

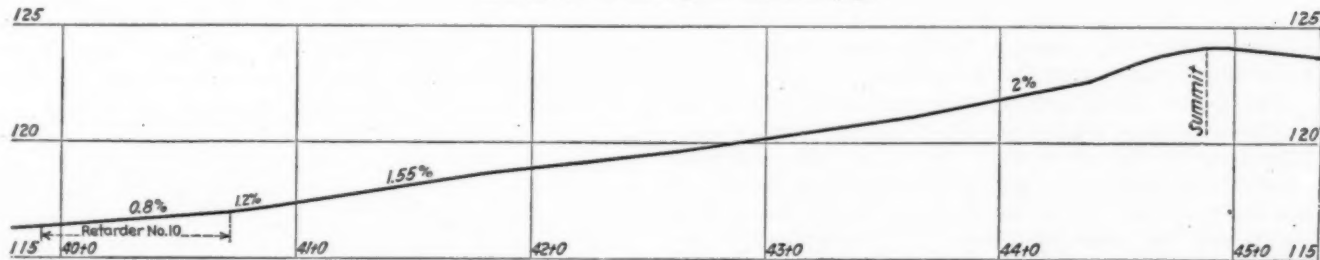
Car Retarders

The retarders consist of 17 units (ten locations) aggregating 577 ft. 6 in. in length, of the latest all-electric design of the General Railway Signal Company.* These retarders are of extra heavy construction, with the springs below the rail, and protected by a heavy plate. The lever arrangement has been redesigned and



Eastbound Freight Classification Yard at Mechanicville

Continuation of drawing on left hand page.



Profile from Summit to Retarder No. 10

"riders." The new location of the hump, with the concentrated ladder layout and revised grades, reduced the average ride from about 2000 ft. to 850 ft.; and as a result it was possible to keep the hump going continuously with 16 riders and two engines, where previous-

* An illustrated article on the G. R. S. car retarders, as used at Blue Island, Ill., on the Indiana Harbor Belt, was printed in the *Railway Age* of February 26, 1927, page 570, including a description of the apparatus for lubricating journals with hot oil. The Blue Island plant was described also in the *Railway Age* of November 15, 1924. The plant at East St. Louis, Mo., on the Illinois Central, was described in the *Railway Age* of March 6, 1926, page 593, with details of the skate-placing machine.

strengthened. The pressure is equalized on both sides of the car wheels, the retarders on each rail acting independently. This allows for variations in wheels; and, further, if a car is lifted in the retarder by excessive pressure, it continues to roll with the flange guided by the retarders, but above the line of pressure. As a result the lifting of a car does not tend to derail it, the retarder simply holding it over the rail. See Fig. 4. The shoes are made of rolled steel fastened by heat-treated nickel-steel screws which are accessible from the top of the shoe beam. The parts are made of heavy steel to withstand the heavy shock of continued service.

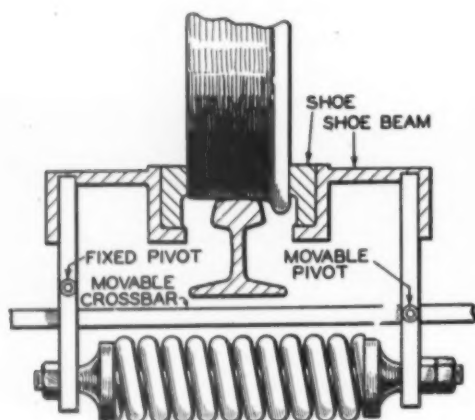


Fig. 4.—Detail of Shoe

Equalized shoe pressure obtained regardless of wheel width

The operating pins are larger and individual lubrication is provided to minimize wear. The adjustments and maintenance have been simplified by using only one adjustment for each spring with an overall adjustment to compensate for shoe wear.

Control Towers. This layout is controlled from two towers, the junction tower (A) being about 360 ft. from the hump crest and opposite the switches of the six group ladders. This tower is a small second-story of the power house and controls the five ladder switches, five incline retarders, and the switches and retarders on two groups of classification tracks. The second tower (B) is located in the field between tracks 12 and 13, and controls the switches and retarders of the other 24 classification tracks. Tower A controls nine retarder units and 15 switches; Tower B controls eight units and 20 switches; total 17 units and 35 switches.

The control machines were designed for operation by one man in each tower, but are so arranged that two men can be used during periods of peak business. The control machine in Tower B is divided into two units, so located that the operator in throwing a switch lever looks toward the switch he is handling.

The power house is located on the south side of the southerly ladder track and is of concrete block construction. It has three separate rooms, the generator room, the battery room and the maintainers' room. A hot water heater in the maintainers' room heats these rooms and the junction tower (A) located in the second story.

The power house is furnished with two sources of outside power;—25-cycle, 3-phase power from the engine terminal at 550 volts; and 60-cycle, three phase City power at 440 volts. In addition there is a 258-volt bank of Exide batteries as a standby in case both a.c. sources fail. Normally the plant is operated by a 25-

cycle motor generator set from Boston & Maine power. Should either source of a.c. power fail the storage battery is automatically cut in. The storage battery is charged with small generator sets by either source of power; or, if necessary to recharge quickly, by both generator sets (one 25-cycle—the other 60-cycle) run in parallel.

Hot Oil System. Hot oil is applied to the journals of cars just prior to their going over the hump. This consists of heating car oil with steam to about 180 deg. F. and squirting it into the boxes under pressure. This insures free rolling cars in the severest weather.

Signals. A color-light hump signal located at the crest, giving four speed indications, is repeated the entire length of the receiving yard by three repeaters, which show the signal indication in both directions. Klaxon horns for use during fogs are situated between each two signals insuring quick response by the engine-man at all times.

The signal indications are also shown on the junction tower control board, and the operator at this tower can at any time set the hump signal at stop. The indications used are:—

Yellow	Slow hump speed
Double yellow.....	Medium hump speed
Green	Fast hump speed
Red	Stop
Yellow and red.....	Back up

Communication. Loud speaker telephones connect the hump with both towers for instant communication between the conductors and operators, while the switching lists are sent from the yard office to the hump and the towers by electric teletype machines. In addition to this there are local and public telephones between the various parts of the yard. Pneumatic tubes are being installed to facilitate the sending of bills and train lists from the receiving yard to the yard office and from there to the outward yard clerk.

Yard Lighting. The yard is lighted throughout its length by flood lights on towers located to throw the light lengthwise with the tracks.

Traffic. The traffic at this yard, which is the western gateway of the Boston & Maine, is made up of three distinctly different classes. It consists of about 15 per cent perishables from the south and west, 25 per cent merchandise from the west, and 60 per cent coal from the Pennsylvania and West Virginia coal fields. Substantially all freight switched in this yard is eastbound. The New York Central delivers its trains at Rotterdam, about 20 miles west of Mechanicville, from where Boston & Maine crews haul them to Mechanicville for switching. The Delaware & Hudson delivers freight directly to the Boston & Maine receiving yard. About 900 cars are received daily from these two connections, which with the cars from the l.c.l. transfer, repair tracks and ice house requires the humping of about 1100 cars daily, with peak days far in excess of this amount.

Economies. The yard has only been in service one month. At present, in order to train retarder operators two men are being used in each tower on all tricks and frequently three. The results, so far, indicate that with one man in each tower 125 cars an hour can be humped; and, with two men in each tower, 250 cars an hour. The operation to date has shown a decrease in yard costs of about 40 per cent; a decrease of 50 per cent in the time cars are held in the receiving yard and a material reduction in damage to cars in humping; and it is believed that the combined net annual savings will be in excess of 50 per cent of the cost of the entire work of providing the added facilities.

Railway Service Endangered by Rate Reductions*

*Shippers must recognize need for adequate earnings—
Government should not engage in barge line
operation on waterways*

By L. A. Downs

President, Illinois Central System

NEVER before in the history of this or any other country has the public been so well served with railway transportation. The great volume of traffic which has been handled in the last few years has been handled so smoothly, so efficiently and so promptly that business has been immensely benefited, and business men have not been slow to express their gratification.

The one danger in this situation, as I see it, is that the continued performance of such satisfactory service may lull the public into a sense of complacency about the railroads. That would be just about the worst thing that could happen. I am not an alarmist, and I do not intend to be alarming about the railway situation, but I think the situation is one that every business man ought to know about and be concerned about.

Adequate Service—Inadequate Earnings

Ours is a growing country and the continued growth of the country makes it necessary for the railroads to keep growing. The railroads are able to give good service at present because their facilities have been enormously improved and expanded during the period of the country's recent growth. By the same token, if they are to give just as good or better service five or ten years from now, they must keep on growing, making improvements where needed, adding to their equipment, their trackage and their incidental facilities. The railroads of 1918 could not possibly give adequate service under the requirements of 1928, and it would be just as impossible for the railroads of 1928, unless they are kept abreast of the country's growth, to meet satisfactorily the requirements of 1938.

Good railway service, therefore, while it has the appearance of stability and is stable for present needs, is ever hanging by a slender thread. Railway men must be alert to keep their plants up-to-date, ready to meet whatever need may conceivably arise, and the public must be no less alert to make sure that conditions are such as will allow the railroads to grow. In the vegetable kingdom a growing plant requires sunlight and water, and in the realm of industry adequate earnings are the sunlight and water which make for growth. For the railroads to grow and keep on providing the kind of service to which the public has become accustomed and which it has found so convenient and profitable, they must be allowed to realize earnings that will enable them to make large investments in the improvement and extension of their facilities. That may seem elemental, and it is, but because it is elemental it is important.

The adequate service which the railroads have been performing in recent years is in sharp contrast with the inadequacy of their earnings. In only one year since the

termination of federal control, eight years ago, have the railroads as a whole fully realized the so-called "fair return" called for by the law under which they have been operated. That one year was 1926, and then they barely earned it. In 1927, with an increased investment in their property and consequently a greater valuation, their net return was substantially reduced and again it fell below the level of the so-called "fair return."

The cause of this condition is not hard to find. We know, for example, that it does not lie in any lack of efficiency and economy in railway operation. The railroads of the country have never been so efficiently and so economically operated as they have been during this period of inadequate earnings. Neither does the cause lie in a diminished volume of traffic. The railroads have sustained certain traffic losses, mainly in their passenger traffic, but on the whole their traffic during this period has been greater than it ever was before. Neither does the cause lie in the quality of service performed. I have already referred to the quality of service performed by the railroads in recent years, and it is well known to you all. The main cause of inadequate earnings is the lowering of rate levels that has been constantly going on. The revenues of the railroads in 1926 were 857 million dollars less than they would have been if the rate level had been the same as in 1921.

The whittling away of rates is going on all the time. Some reductions that have been made in recent years have affected large volumes of traffic and large areas of the country, but for the most part they have been slight reductions on small items of traffic. Taken by itself, any one of these reductions would be insignificant, but put them together, and they amount to an astounding total. The 857-million-dollar loss of revenue in one year is an example.

Valuation and Rates

I appreciate the desire which every shipper has to obtain the lowest rates possible on the movement of his traffic, but I also appreciate the great stake which every shipper has in the maintenance of an adequate system of national transportation. Low rates are desirable, and American railway rates today are low, measured either by rate levels in other countries or by what rate levels have been in this country in times past, general price levels considered. The American dollar today buys more and better transportation than it ever did and more than its equivalent will buy in any other country of the world. But low rates are not desirable to the extent of impoverishing the railroads, of making it impossible for them to keep abreast of the growth of the country, of making it impossible for them to perform the kind of service which aids and enriches business of all kinds.

Whenever rates are mentioned nowadays, the matter

* From an address delivered at the annual dinner of the New Orleans Association of Commerce at New Orleans, La., on January 9.

of railway valuation comes to mind, for the two things have been frequently associated in recent discussions of railway questions. A good many persons have a grossly exaggerated idea of the effect that an increase or decrease in valuation may have upon rates.

Before any attempt is made to earn any return upon any sort of valuation, there must first be paid the wages of railway employees, the cost of fuel and other railway supplies, taxes and rents—and these items constitute the bulk of railway expense. In 1926, for example, more than 80 cents out of each dollar received by the railroads went to pay their expenses, leaving less than 20 cents out of each dollar of rates to be applied as a return upon valuation. An increase or a decrease in valuation would not affect the 80 cents out of each rate dollar; its only conceivable effect would be upon the 20 cents.

However, it is not at all likely, in my estimation, that an increase or decrease in valuation would have much effect upon even the 20 cents of the rate dollar that represents return on valuation. Suppose, for example, that the valuation of the railroads should be doubled. I don't know of anyone who expects anything like that, but it will do for the purpose of illustration. The percentage of valuation which shall be considered a so-called "fair return" to the railroads is not a settled thing. The Interstate Commerce Commission is required to determine it "from time to time." It can be changed whenever the majority of the commission desires, and it can be changed as often as it desires. One change has in fact been made. In 1922 the commission changed the rate from 6 to $5\frac{3}{4}$ per cent. The commission is no more bound to keep it at $5\frac{3}{4}$ per cent, where it is now, than to put it at 10 per cent or 2 per cent or any other percentage, large or small. Indeed, it seems to me the likely thing that if the valuation of railway property should be doubled, the commission would probably cut the rate of return on that valuation in half—or, if the valuation were to be cut in half, the commission would probably double the rate of return thereon.

In the final analysis, the rate of return on valuation is not the end of rate making. The end is the provision of rates that will allow the railroads to realize sufficient revenue to pay expenses, taxes and rents with enough left over to insure the provision of an adequate system of transportation now and in the future. We know how much money it takes to pay the expenses, taxes and rents of the railroads, and we know how much the railroads should have left over to insure their continued growth. The relation of the latter sum to the valuation is merely a matter of mathematical calculation.

The little effect which valuation has upon rates can be readily illustrated by what has occurred in recent years. Between 1921 and 1926 there was a net addition of something like four billion dollars to the investment in railway property existing at that time. This amount was actually put into the property for the improvement of old facilities and the addition of new ones, and there is little question that it represents that much increased property value. In the face of this impressive increase in valuation, however, what actually took place in the level of rates? I answered that question when I pointed out that the railroads in 1926 received 857 million dollars less than they would have received if the 1921 rates had been in effect. The decline in the average rate from 1921 to 1926, in the face of an increased valuation, was more than 15 per cent.

Railways and Inland Waterways

There are some persons who accord inland waterways much greater importance in the national transportation system than they have now or have had since the development of railroads got well under way. I feel no hostility

toward the development of inland waterways. If their development will enrich and prosper the Mississippi Valley, I am in favor of their development, because our interests are here, and their gain is ours.

However, I cannot believe that any business man would want to have inland waterways developed to the detriment of the one agency which is and must continue to be his main reliance for transportation. Some of you are in a position to take advantage of inland waterway transportation. Others of you are not. But all of you are users of railway transportation, even to complete the service that is partly performed by inland waterways. An inland waterway is rarely able to perform a complete transportation service. It must usually be supplemented by railway transportation at one end or the other, and not infrequently at both ends. Inland waterways cannot stand alone. They can be effective only if there are good railroads in connection with them, and upon the railroads must the majority of New Orleans and all other business men rely as their main dependence for transportation.

The experiment which the United States government has been making for the last ten years with barge-line transportation on the Mississippi river has had the active co-operation of the Illinois Central System. I believe that shows our good faith in the statements that have been made over and over again that the federal barge line is an experiment only. If the government is able to demonstrate that the operation of barges on inland waterways is a commercial success, I am in favor of having it carry out its announced intention of turning its barges and towboats over to private ownership, and it seems to me there could be no surer proof of the barge line's success than for practical men with business experience to seek to buy it. However, it is not within my knowledge that even a single offer has been made to buy the federal barge line. Until the government finds a buyer, there are only two courses open for it to pursue without a complete reversal of policy. One is to continue the experiment until its success is demonstrated by the test of its salability. The other is to give up the effort and abandon the experiment. The experiment is now in its tenth year, but I am not pressing for an announcement of the result. I am willing for it to be continued to the end. However, while it is continued, I am opposed to any move to put the United States Government permanently in the business of barge-line operation. It seems to me that the proposal to authorize a tenfold increase in its so-called capitalization is such a move.

* * *



A "Family Car" on the Buenos Aires Southern



The Freight Transfer Station of the Lehigh Valley at Manchester

Freight Transfer Operation Aided by Tonnage System

Lehigh Valley employees at Manchester, N. Y., handle packages speedily and with little damage

AS a result of improved methods of operation, aided by a tonnage system, the Lehigh Valley now handles at its freight transfer station at Manchester, N. Y., a greater daily tonnage with an average of 15 gangs than was formerly handled with 20 gangs. The tonnage system is predicated on the handling of 56 tons per gang per day and 75 per cent of the gangs employed earn a bonus daily.

The trucking gangs regularly average more than 65 tons of freight per day and in August 1927, a light month, 365 gangs, an average of 13.5 per day, handled an average of 71.28 tons per gang per day, without any overtime. During one day, August 26, 11 gangs transferred 932 tons from 135 cars, or an average of 84.72 tons per gang.

More than 1,000 tons of freight is handled at this station daily when traffic is normal, in one eight hour shift, but an increase in tonnage and in the speed with which it is handled has not increased the number of exceptions or the damage to freight. In August, 1927, 25,829 tons of freight were handled with an average of only 0.038 exceptions per ton, consisting of 0.011 overs per ton, 0.012 shorts, 0.015 damages and no pilferage.

Facilities at Manchester

This freight transfer station was opened on February 2, 1914, at Manchester, N. Y., a division terminal 88 miles east of the Niagara frontier, to act as an assembly point for less than carload freight moving in both directions. Its advantageous geographical position permits of daylight operation from 8 a.m. to 4:30 p.m.

The station serves traffic originating in the eastern territory destined to the West, as well as traffic originating in the West for eastern destinations, and delivered to the Lehigh Valley at the Niagara frontier. The bulk of the tonnage handled is westbound, arriving in fast "symbol" trains from New York, Jersey City,

Philadelphia and New England. Less than carload shipments delivered to freight stations in New York, Jersey City, or Philadelphia up to 4:30 p.m. are transferred at Manchester the following day, thus insuring early second-morning delivery to western connections at the Niagara frontier.

The buildings are of steel and concrete fireproof construction and can accommodate 244 cars at one time. There are four island platforms 1,013 ft. long, con-



The Trucks Are Run Inside the Car to Facilitate Stowing

nected by a central transverse platform 39.5 ft. wide. The platforms are also connected by six movable trucking bridges situated at strategic points. Each of the longitudinal platforms is 17.5 ft. wide over all, but the clear roadway is reduced to a width of 15.5 ft. by reason of the posts which support the canopy roofs. The office building is two stories, part of the first floor being used as an office for the general foreman, and the remainder as a lunch and lounging room for employees. The agent's office occupies the entire second floor.

A fleet of 72 electric load carrying trucks is maintained. These trucks are 4 ft. 9 in. long, 3 ft. 8 in.

wide, with the platform 11 in. from the floor. At one end of the transverse platform is a garage equipped to charge storage batteries and make repairs to these trucks. Immediately adjacent is a coopering room,



The Set-up at One of the Platforms Ready for the Day's Work

where packages and boxes received in bad order are repaired and checked.

Methods of Operation

Waybills covering practically all the westbound freight handled at Manchester arrive by passenger train ahead of the cars containing the shipments. They reach Manchester early in the morning, before the platform gangs have reported for work and are classified in the general foreman's office. A form known as a checker's car report is attached to them and they are "flagged" in accordance with a fixed lay-out, which is described later. The checker's car report contains information regarding the point of origin of the car, its number, initial and weight of contents. It also provides blanks which the checker later fills in, giving the seal record, cubic capacity, and the general condition of the car. Space is also provided for inserting the time that unloading was started and finished, and whether the stowing was good or bad.

A sufficient supply of waybills is flagged before 8 a.m. to permit the gangs to start operations as soon as they report. The bills are passed out to the checkers on the platform through a ticket in the wall of the general foreman's office in the order in which cars are placed at the platform. In this manner, each checker is assured of an even distribution of light and heavy work.

Each trucking gang consists of a checker, a loader and three truckers. Prior to the installation of the tonnage plan, only three electric trucks were assigned to each gang but this allotment has been increased to four trucks at the request of the employees, so that one truck may always be in the process of loading while the truckers are delivering the freight to the cars and be ready to be taken out by the first trucker to return.

A fixed lay-out is maintained for outbound cars; that is to say, daily cars for the same destination are always to be found in the same location. These locations are indicated by numbers and a lay-out sheet is provided, giving the destination of the car, the track on which it is situated, and its position on that track. The lay-out was designed so that the minimum of switching would be necessary in spotting or pulling the transfer tracks.

The Veri-Check System

As each package leaves a car, the checker chalks it with the location number of the car to which it is to be transferred. As an additional precaution against misloading, he also fills out a veri-check ticket for each shipment. These tickets show the spot number of the car, its destination, the number of the waybill covering the shipment, the number of pieces billed and carried and a record of any overage or shortage. They also carry the numbers of the checker and the trucker so that the responsibility for any misloading is apparent immediately.

After delivering the shipments on his truck to the car for stowing the trucker deposits the veri-check tickets in a box which is attached to each car for that purpose. Before the loaded car is permitted to move out, the verification clerk examines the veri-check tickets in the box. By means of the information contained on the tickets, he is able to determine in a short time whether the car contains only such shipments as properly belong to it. In addition, the overage and shortage record contained on the ticket serves as a guide for any exceptions that it may be necessary to note of the billing covering the car.

The success of this system is indicated by the following recapitulation of exceptions per ton at Manchester for four representative months:

	Tons	Overs	Shorts	Damages	Pilferage	Total
August, 1926.....	26,138	376	367	367	33	1,143
per ton.....		0.014	0.014	0.014	0.001	0.043
October, 1926.....	30,001	431	452	556	30	1,469
per ton.....		0.014	0.015	0.019	0.001	0.049
March, 1927.....	29,582	333	266	478	18	1,095
per ton.....		0.012	0.009	0.016	0.001	0.038
August, 1927.....	25,829	297	316	388	7	1,008
per ton.....		0.011	0.012	0.015	0.000	0.038

The Tonnage System

The tonnage system now in effect at Manchester is the result of many experiments. It was evolved from



The Platform Office from Which the Bills Are Distributed to the Checkers

the experience gained by these experiments and also by a study of several tonnage systems in effect in other industries. None of these were adaptable in their entirety, but the basic principles were used, with such changes as were essential to meet the needs of a freight transfer station.

When the present tonnage system was inaugurated, on March 1, 1924, a basis of 56 tons per day per gang was decided upon, which has proved satisfactory to both the employees and the railroad. After more than three

years' operations under this plan, an average of more than 75 per cent of the gangs make a bonus each day. The average frequently runs higher than this over a stretch of several days, largely dependent upon the character of the freight being handled, and it is showing a steady improvement from month to month. In this regard, on August 19, this year, 12 gangs handled 940 tons of freight from 134 cars, an average of 78.33 tons per gang, and every one of the 12 gangs made a bonus. On the high freight handling day previously mentioned, August 26, when the freight handled averaged 84.72 tons per gang, 10 of the 11 gangs employed made a bonus.

The Lehigh Valley has not overlooked one of the most important features of any tonnage plan, namely, the equitable distribution of the work. By means of the assignment of the work as previously described, each gang is assured of a fair proportion of the cars that are easily handled, as well as those that require more time in handling. To carry out this plan further, the gangs are rotated in turn in unloading certain cars which are received at Manchester daily and which invariably contain a large number of light packages for

The average amount of freight handled daily is about 1,000 tons, but during the autumn months, this is frequently exceeded. During October, 1926, for example the daily average was 1,153 tons; 1,415 tons were handled October 7, and 1,325 tons the following day, while more than 1,200 tons were handled on eight days during the month. On the peak day, 20 gangs handled 1,415 tons from 177 cars into 176 cars, an average of 70.76 tons per gang, which was the high average up to that time.

Instruction Book

A 40-page printed instruction book is provided for the convenience of the supervisory force. This contains complete general instructions governing the loading of less than carload freight. A list is given of all merchandise cars operated, showing originating point of cars received and destination of cars forwarded. This list occupies 14 pages and is complete to the smallest detail. A further list is given of merchandise cars received from and loaded to industries and steamship lines. The book also contains an alphabetical list of stations on the Lehigh Valley, and a list of connections. Ten pages



Transverse Platforms in the Center Facilitate Truck Movements

scattered destinations, being particularly difficult to transfer for this reason.

The stevedoring force consists of approximately one stevedore for each trucking gang employed. They share in the tonnage system, dividing equally the total daily tonnage earnings of all loaders.

An unusual feature of the plan is the payment of bonuses to foremen, based on the amount of freight handled under their supervision. This has had the effect of reducing the number of gangs employed and maintains the differential between the earnings of the supervisory and the labor forces.

Freight Handling Performances

The number of tons handled per gang per day is rising steadily. In August, 1926 it was 68.05. This was increased to 68.39 in March, 1927, and to 71.28 in August, 1927. During August, 1926, the high figure for any one day was 75.34 tons, while in August, 1927, this tonnage was exceeded on five days and equaled on another day. The tonnage handled per day was over the 70 mark on 17 days, while during one period of five successive working days, the following tonnage was handled: 77.30; 73.72; 84.72; 72.08; 70.54; or a daily average for the five days of 75.67 tons per gang.

are devoted to a series of loading order charts, which enables the flag clerks to tell the proper loading point at a glance. The book is of value to the supervisory forces in that it provides a definite place for each piece of freight, so that their duties of checking the loading are much simplified.

Extensive records are maintained which facilitate the checking of any feature of the operation by transportation representatives or others interested. Complete cost figures are also maintained, showing the fixed cost, labor cost and mechanical cost, which supply a further check on the relative efficiency with which the station is being operated.

A consist report covering each car loaded is forwarded to the traffic representatives interested, thus giving them a passing record of all merchandise moving through Manchester.

The Class of Employees

A service train is operated between Manchester, N. Y., and Geneva with the result that a high type of freight handlers is available.

The number of men employed depends upon the amount of business to be handled. In this regard, particularly for the heavy fall and winter movement. Man-

chester is in a fortunate position, for it is in an agricultural district and labor for the peak periods of these seasons is recruited from nearby farms. Many of these men return year after year and form an experienced auxiliary force.

The tonnage system has also been responsible for attracting and holding labor that could not otherwise have been secured. Under present conditions there is little labor turnover at Manchester. Damage and pilferage, particularly the latter, have been much reduced since a stable force was secured. The transfer station is well policed, three special agents being on duty daily. These men recheck commodities liable to pilferage, such as cigars, cigarettes and candy.

N. I. T. L. Lukewarm on Consolidation Bill

WASHINGTON, D. C.

HEARINGS on the Parker railway unification bill have been continued before the House committee on interstate and foreign commerce with little indication either as to when they will be terminated or as to what further changes in the bill may be adopted by the committee.

R. C. Fulbright, chairman of the legislative committee of the National Industrial Traffic League, testified on January 27, and while he said the shippers are in favor of a bill to repeal paragraph 2 of section 5 of the present law, to relieve the Interstate Commerce Commission of the duty of preparing a complete consolidation plan, and to provide adequate machinery by which permissive consolidations may be authorized by the commission when found by it to be in the public interest, gave little comfort to those who desire to have consolidations brought about. He said the shippers are insistent that existing carrier competition shall be substantially preserved. They also take the position that there is no great need for further consolidations and object strongly to the passage of any law that could be construed as a Congressional declaration in favor of a consolidation policy, believing that each consolidation should stand on its own merits.

Mr. Fulbright said that 33 "systems" to-day supply more than nine-tenths of the railroad service of the country and he cited statistics to show the great improvement in efficiency since 1920 as evidence that "consolidation is not necessary to preserve our railroad system or its efficiency."

Another point made by Mr. Fulbright was that the bill does not define "unification" and he said it should recognize as a unification the method by which a railroad acquires a controlling interest in the stock of another. Otherwise, he said, the bill would leave unregulated the method most often used and enable the roads to put a stop to competition. He said he did not believe a railroad should be required to give notice to the world that it proposed to acquire the stock of another but that it should not be allowed to elect a board of directors and control the policies of a company until it had been authorized by the commission to acquire control. He expressed the opinion that the present law does not relieve a carrier from the operation of the anti-trust laws until the commission has authorized it to acquire control and he proposed that the acquisition by one carrier of voting securities of another in sufficient amount to enable it to control its policies shall be deemed a unification provided that it may be al-

lowed to retain the securities pending a decision on its application.

Alfred P. Thom, general counsel of the Association of Railway Executives, replying in part to Mr. Fulbright's proposals on January 31, said that the language proposed requiring that existing carrier competition shall not be substantially lessened would nullify the purpose of the bill. That is the language used in the anti-trust laws, he said, whereas the purpose of the bill is to relieve carriers from the operation of those laws under circumstances regarded by Congress and the commission as in the public interest. "If you put that language into the law you would have no unifications," he said, because there would be no ground for relief from the anti-trust laws. He said that almost any unification would curtail competition to some extent, although it might result in building up a much stronger competition between strong systems, because to put together a strong system is at once an inducement to its competitors to put themselves in a similar condition of strength.

Minority Opposition

In commenting on criticism of the bill made by Elihu Root, Jr., representing minority stockholders of the Cleveland, Cincinnati, Chicago and St. Louis, Mr. Thom said that a minority ought not be allowed to interfere with a plan held by the commission to be in the public interest but that the bill provides for the ascertainment and payment of a fair value for their stock. He said the amendment proposed by Mr. Root to disfranchise the stock held by the company proposing to acquire more complete control in voting on the question of consent to a unification plan, would leave the majority no way to get an application before the commission without condemnation proceedings and would create an obstacle to consolidations practically insuperable. Every lawyer knows, he said that there is more danger of "strike" litigation by minorities than there is of oppression of a minority by a majority. However, referring to Mr. Root's statements regarding the difficulty faced by a minority interest in a contest with a majority in control of a company, Mr. Thom suggested a provision in the bill so that if the commission finds, upon application by a majority, that it has been subjected to undue hardship, it may allow the expenses of litigation to be added to the award finally made as to the value of minority stock condemned. With such a provision, he said, he thought the bill would provide perfect protection to a minority.

Mr. Thom also said the railroads feel that the commission ought to have power to prevent the acquisition of a strategic line by one company when it thinks it would be more to the public interest that it be grouped with another, but that it should not have power to require one road to be grouped with another.

CARS DONATED AS DORMITORIES.—The Pullman Car & Manufacturing Corporation and the Illinois Central have donated four Pullman cars equipped as dormitories and one coach to be used as a library and reading room, to the John Wesley College at Cambria, Ill., in order to assist in the development of the school whose facilities are not adequate for the enrollment. This agricultural college was founded a year ago to stimulate agriculture in a territory heretofore devoted primarily to mining. The Peabody Coal Company and the Madison Coal Company, the latter a subsidiary of the Illinois Central each deeded to the administration 200 acres of land with the stipulation that the land would revert to the original owners in the event that it would be no longer required for educational purposes.

Scope of Railway Timber Treatment Extending

*Wood preservers consider
bridge and building
materials as well
as cross
ties*



THE close relation between the railways and timber preservation was evidenced clearly by the subjects considered at the annual convention of the American Wood Preservers' Association at Montreal, Que., on January 24-26. The treatment of ties was brought to the fore in a paper presented by George J. Ray, chief engineer of the Delaware, Lackawanna & Western in which he reviewed the results secured on that road by the universal treatment of ties during the last 18 years. The treatment of bridge timbers, although of later origin and less general adoption, was shown to offer a further opportunity for economy in railway maintenance, by a paper presented by Earl Stimson, chief engineer maintenance, Baltimore & Ohio, in which he demonstrated the practicability of framing these timbers before treatment. The preservation of car lumber, although of still more recent introduction, was shown to offer still another field for development by the railways in a report presented by a committee of which J. T. St. Clair, engineer of car construction, Atchison, Topeka & Santa Fe, was chairman. A number of other papers and reports were presented, which were devoted more directly to the perfection of processes of handling and treating timber and to the presentation of new preservative materials. All sessions of the convention were presided over by O. C. Steinmayer, superintendent timber preservation, Canada Creosoting Company, Montreal.

A further recognition of the place that the railways hold in timber preservation was afforded by the annual dinner on Wednesday evening in which Lord Shaughnessy, a director of the Canadian Pacific, presided as toastmaster, and Sir Henry Thornton, chairman and president of the Canadian National was the speaker. Both of these men emphasized the fact that the two leading railways of Canada are the chief users of forest products in the Dominion, and described the steps that they have taken to treat their timbers, particularly ties, with preservatives to reduce their drain on the forests. Sir Henry Thornton, traced the growth of timber treatment from its inception on the Canadian National in 1911, when 1,300 ties were treated, to the present time when 5,000,000 treated ties are in service, in addition to large quantities of bridge timbers, piling and switch ties.

He predicted that the time would come when 100 per cent of the ties and timbers used by the Canadian railways would be treated with preservatives.

A number of years ago the association began the compilation of statistics of tie renewals on a number of railways in the hope that it might be possible to establish a definite relationship between the number of treated ties inserted in track from year to year and the tie renewals in subsequent years. After extended study and analysis, the Committee on Tie Service Records, of which C. F. Ford, supervisor tie and timber department, C. R. I. & P., was chairman, has decided that it is impossible to develop such relationship because of the fact that the number of ties removed per mile in any year depends upon a number of factors, the more important of which are the proportions of treated and untreated ties laid each year, the kind of treatment given the ties, the amount of timber used, the character of track construction, the density of traffic, the character of maintenance and the degree of approach to the normal age limit of the treated ties. With this report the committee submitted the tie renewal records of 26 railroads, showing average renewals for five-year periods, ranging from a minimum of 90 ties per track mile to a maximum of 299.

The Committee of Plant Operations, of which Ed. Kelly, assistant manager treating plants, A. T. & S. F., was chairman, presented a report emphasizing the importance of good tie handlers to the economical operation of a timber treating plant and calling attention to the fact that such men can be secured and held only if steady employment is offered them. This, in turn is possible only with the fairly uniform delivery of ties at the plant, which in turn follows uniform production. The committee urged the railways and tie producers to give more attention to this phase of tie production in order to make possible the reduction of plant operating costs.

The following officers were elected to serve for the ensuing year: president, H. R. Condon, general manager, American Mond Nickel Company, Pittsburgh, Pa.; first vice-president, H. E. Horrocks, manager Pacific Creosoting Company, Seattle, Wash.; second vice-president, C. C. Cook, maintenance engineer, B. & O. Baltimore, Md.; secretary-treasurer, H. L. Dawson, Chicago;

members of the executive committee: R. S. Belcher, manager treating plants, A. T. & S. F., Topeka, Kans.,

D. C. Jones, general superintendent, Ayer & Lord Tie Company, Chicago.

The Treatment of Car Lumber

A committee of which James T. St. Clair was chairman, presented a report on the extent to which it is practical to treat timber entering into the construction of freight cars, to increase its resistance against decay. The following is abstracted from this report:

In an endeavor to determine where we are justified in giving first consideration to preservative treatment, we have made comparative analyses of five types of equipment, we have made gondola, ballast and flat cars. A total of 5,965 cars was considered during a 15 months' period, in which \$320,487.35 was expended on 4,214 cars, for material and for labor of removing and replacing lumber due only to decay, the labor cost being taken from A. R. A. rules. This is an average of over \$53 per car for the total number of cars considered, or \$76 per car for those requiring renewal of decayed lumber.

The following table shows a comparison between the five types of equipment just mentioned, the average cost per car shown being the cost due to renewals due to decayed lumber:

Type of Car	Total cars considered	Average cost per car	Number of cars with decayed lumber	Average cost per car
Box	5,072	\$ 39	3,515	\$ 57
Stock	216	187	210	192
Gondola	451	135	365	167
Ballast	178	92	110	149
Flat	48	28	14	98

A study of this table indicates the generally accepted statement, that rot and decay are most prevalent in stock cars, to be a fact, also that on closed cars, such as box, we have the minimum loss on account of the maximum protection offered against the weather. It must be understood that when a piece of lumber is removed because of decay, it is often necessary to remove adjacent members in order to perform the work properly and this expense is, of course, included in the cost of repairs due to the removal of decayed members. This is illustrated in considering the repairs to the stock cars, which total \$40,471.64, of which \$5,876.01, or 14½ per cent of

the total, was caused by removing and renewing lumber in order to take care of adjacent decayed parts.

In studying our data, it was of interest to note the following, which gives a comparative cost per car, for the different types, of the items on which the greatest expense is involved:

Material	Board feet renewed	Total cost	Avg. cost per car
BOX CARS: (3,515 cars considered)			
Side sills and side nailers (YP).....	100,728	\$35,356.29	\$10.06
Decking (YP)	83,664	8,095.72	2.30
Sheathing (YP)	740,573	89,815.74	25.55
Roofing (YP)	11,308	1,198.84	.34
Side plates (YP)	6,505	9,980.28	2.84
STOCK CARS: (210 cars considered)			
Roofing (YP)	190,592	\$21,445.36	\$102.12
Side braces (YP)	20,654	2,824.32	13.45
Side posts (Oak)	14,072	3,232.36	15.39
Decking (YP)	5,137	413.76	1.97
Side sills (YP)	1,270	431.60	2.06
GONDOLA CARS: (365 cars considered)			
Decking (YP)	293,750	\$27,778.80	\$76.11
Side and inter-nailers (YP)	60,247	19,881.26	54.47
Side and end planks (YP)	90,873	12,690.64	34.77
BALLAST CARS: (110 cars considered)			
Decking (YP)	69,695	\$6,086.00	\$55.33
Side and inter-nailers (YP)	5,914	1,951.62	17.74
Side and end planks (YP)	7,273	1,197.84	10.89
FLAT CARS: (14 cars considered)			
Decking (YP)	9,068	\$857.84	\$61.27
Side and inter-nailers (YP)	2,037	428.42	30.60

Since the items listed cover the largest part of the total expense involved, they are the ones to receive special attention. In considering the figures, the item of roofing on the stock cars stands out with greatest prominence, and the decking of open top cars comes next. This is consistent, as both have maximum exposure to the weather.

Since sill and framing material should be treated after being milled, an additional expense is introduced, which proves to be a handicap, especially where these items enter into repair work. On the other hand, decking and roofing are more nearly standard on a larger variety of equipment and can be carried in stock in given lengths and trimmed to suit the particular application, the exposed ends being hand brushed.

Framing Structural Timbers Before Treatment

By Earl Stimson

Chief Engineer Maintenance, Baltimore & Ohio

It is universally conceded that all timber used for structural purposes, that is exposed to conditions that produce decay, should be given preservative treatment. This includes all timbers used in bridge and trestle construction and some used in building and platform work. Adequate treatment costs considerable. To realize the maximum returns, great care must be used in protecting the timber, both before and after treatment.

Before treatment the timber should be carefully piled in a well-drained storage yard, in such a way that the area of contact between the pieces will be the minimum and that there will be sufficient air space between them to permit free circulation of air, this to insure thorough air seasoning. After treatment nothing should be done to the timbers that will penetrate the heavily treated outer zone and expose the lighter treated interior. To prevent this it has become a well-established practice to adze and bore cross-ties before treatment, and, with better reason, all bridge ties and timbers should be framed, sized or cut to lengths, as the case may be, before treatment. In other words, they should be pre-framed. This is

good, from the timber preservation standpoint, as the timber goes into the structure perfectly protected by a heavily treated surface and is not left exposed to infection and decay where framed, bored or cut.

This pre-framing in itself has a very strong appeal from an economic standpoint. There is probably no more awkward and expensive operation than the framing of bridge ties and timbers in the field. It is generally done at the bridge site by the crudest methods of handling, and with hand tools, with a considerable waste in cutting. Much of the work is necessarily done in unfavorable weather, which, on account of the nature of the work and the usually exposed location where it is done, further increase its costliness.

The treating of the timbers requires that a large stock be concentrated at the treating plant for seasoning. Obviously, then, the timbers should be framed at the plant. This gives the opportunity to centralize the framing of all timbers required for a railroad, or if a large one, a designated part of it, at the treating plant, and justifies the building of a sawing and framing mill. Such a mill, housed in a light,

all-steel building, costs in the neighborhood of \$40,000.

The writer built such a mill at the treating plant owned and operated by the railroad with which he is connected. All machines are motor driven. The current is furnished from the power plant of the treating plant. As several of the machines were released by the motive power department and were taken over at a depreciated value, the actual cost of the mill was \$32,290.

This mill was started in full operation in January, 1925. The output for 1927 was as follows:

Bridge ties	22,163 pcs.	1,805,255 ft. B.M.
Trestle ties	12,653 pcs.	608,600 ft. B.M.
Guard rail timbers	2,138 pcs.	151,811 ft. B.M.
Caps	2,184 pvc.	378,396 ft. B.M.
Stringers	5,593 pcs.	1,605,082 ft. B.M.
Miscellaneous	14,193 pcs.	589,151 ft. B.M.
	58,925 pcs.	5,138,295 ft. B.M.

The Economy of Power Framing

The cost of framing the bridge ties and guard rail, including all charges, both operating and fixed, was \$5.74 per M. ft. B.M. as compared with \$16 per thousand when done by hand. The cost of sizing the trestle ties and timbers, that is cutting to length and planing to thickness, was \$3.42 per thousand ft. B.M., as compared with \$7 additional cost if bought sized to thickness. The miscellaneous items cost \$6.03 per thousand, with a saving of about 50 per cent. On this basis the total savings effected in 1927 by handling the timbers through the mill, as compared with the method of hand work along the line of road, amounted to \$31,000, or very nearly a 100 per cent return on the \$32,290 invested in the mill.

There is no doubt that the framing and boring of timbers after treatment may expose the lighter treated interior or even extend to where the preservatives have not penetrated, and render such parts vulnerable to decay. I can find no records of the effect of such conditions on the service life of timbers, nor does my own experience furnish any. For example, it may be assumed that well-treated pre-framed timber has a service life of 25 years, and that on account of framing and boring after treatment, decay attacks the exposed untreated interior and causes failure of the timber after 18 years' service. There is then a loss of 7 years' service. The cost of the timber in the structure is taken at \$105 per thousand ft. B.M. By the usual formula the annual cost for 18 years' life is found to be \$9.70 and for 25 years' life it is \$8.21. Pre-framing, therefore, saves \$1.49 in annual cost or \$37.25 during the 25-year service life of the timber.

This, no doubt, is an extreme example and the

average is probably much less. Much of the timber is so thoroughly treated that the framing after treatment has no harmful effect. The framing on the ties, guard rails, caps and stringers is on the underside of timbers, and the untreated wood, if exposed, is somewhat protected. While the benefits to the timber from pre-framing may, therefore, be somewhat minimized, pre-framing may still be considered good insurance and the best of practice.

Pre-Framing Is Practical

When it was proposed to frame all bridge ties and timbers at a central plant, disastrous results were prophesied, and it was said that it could not be done successfully. This, however, has not proved to be the case.

Much of the framing is of timbers of standard dimensions, and requires no special information or plan for framing. This refers particularly to such items as trestle ties which are cut standard length and sized to uniform thickness and are not dapped, the sizing of stringers and caps, and the framing of guard rails and standard bridge ties with daps of uniform width and depth.

For other than standard timbers it is necessary to furnish the mill with framing plans, giving the dimensions in detail. This becomes somewhat complicated on the longer deck girder spans, with the varying number of cover plates. When the bridge is on a curve, the problem becomes still more interesting. It is remarkable how few misfits are found, and these are more often, however, the result of mistakes in the framing plans than in the mill.

There is no reason why practically all of the timbers used in structural work cannot be framed in the mill and sent out for erection in the field, following the same practice used in building steel structures, of fabricating the members in the shop, leaving only the erection to be done in the field. We are doing this at our plant.

Doing this work at a well-equipped mill not only saves in labor costs, but results in a better job, saves waste in cutting, and reduces the weight and bulk of the timber to be handled to a minimum, which latter effects a saving in the cost of handling and in freight. There is also a considerable indirect saving through the more effective control of the timber stock by having it concentrated at the treating plant where it can be cared for properly, kept within the bounds of the actual requirements, and is available for a wider range of distribution. This makes it possible to carry a smaller timber stock, with a large reduction of waste, than when the stock is scattered along the road.

What the Lackawanna Has Gained by Treating Ties

By George J. Ray

Chief Engineer, Delaware, Lackawanna & Western

The Delaware, Lackawanna & Western started the use of treated bridge ties in 1905. From that date until 1909 the majority of the bridge tie renewals were made with treated timber. In 1907, 7-in. by 9-in. sawed heart yellow pine track ties were placed in the new train shed at Hoboken. These ties are still in service after 20 years and give every indication that they will last 20 years longer. We did not have as good success with

our bridge ties. The 8-in. by 8-in., 8-in. by 10-in., and 8-in. by 16-in. bridge ties, especially on the main line, were destroyed mechanically long before they showed any signs of decay. They were not large enough and the deep flange tie plates did much to hasten their destruction.

In 1909 we decided to arrange for the treatment of all ties and bridge timber and since that year all of our

ties have been treated with creosote oil except such chestnut ties as were available for use on minor branch lines and sidings.

Large Tie Plates Essential

The experience we had with the mechanical failure of our 8-in. pine bridge ties led us to make an exhaustive study to determine the proper means of protecting our treated cross ties against mechanical wear. After an extended study, in which we were ably assisted by Dr. Herman von Schrenk, we reached the conclusion that we should adopt a flat-bottom tie plate for use on all main track ties. The screw spike was in turn adopted in place of the cut spike to give us the maximum holding power and at the same time extend the life of the tie as long as possible against mechanical wear.

Our first flat-bottom tie plate, purchased in 1910, was 7 in. by $10\frac{1}{4}$ in. by $\frac{1}{2}$ in., with lugs to support the screw spikes on the outside only. In 1911 we increased the length of the plates to $10\frac{5}{8}$ in., added lugs on both sides of the rail and increased the thickness to $\frac{5}{8}$ in. In 1914 we increased the thickness to $\frac{3}{4}$ in. and did not change this plate further for 10 years. In 1924 we adopted the A. R. E. A. 130-lb. rail as standard, which made it necessary to change our tie plate and our standard plate for this rail is now $7\frac{1}{2}$ in. wide, 12-13/16 in. long and $\frac{3}{4}$ in. thick at the center of the base with a cant of 1 in 40. The rail sits in a groove in which it is held by one cut spike on either side of the rail. The plate is fastened securely to the tie, independently of the rail fastening, by two screw spikes. Thus we have two cut spikes and two screw spikes to each plate, with four spare holes.

It will be readily understood that such tie plates cannot well be used with under-size ties. Since we started to treat all of our cross ties in 1910 we have insisted on reasonably uniform ties for all of our main track work and since 1911 we have been boring and adzing all ties before treatment.

In 1910 it was generally considered unwise to treat white oak ties, since they take little treatment and give satisfactory service during a reasonable life without treatment. On the other hand beech ties were considered good for treatment. It seemed reasonable that a light treatment that would so materially extend the life of a beech tie ought to be valuable in extending the life of a white oak tie and we questioned why we should not go to the added expense of treating the white oak tie and thereby extend the life of the best tie we have ever known? Experience has proved that this was wise.

We purchased local hardwoods and for the first few years a large number of sap pine ties. The Lackawanna has a large mileage of curved track with heavy grades. We soon found that the sap pine ties cut too rapidly on the curves in spite of the heavy plates and screw spikes used to protect them, so about 1914 we discontinued their purchase and since then we have used hardwoods exclusively. The sap pine ties have, however, given wonderful service on branch lines and on our main line tangent tracks. As a rule we have secured from 8 to 12 years service from sap pine ties on curved track while a majority of these ties placed in tangents during 1910, 1911 and 1912 are still in service with a prospect of much longer life. It is quite likely that we will use many treated pine ties in the future but as far as possible they will be confined to branch lines or tangent tracks on the main line.

From the start we have treated all switch timber and bridge ties. Practically all of the bridge ties we have used since 1912 are oak. As far as possible we

have used white oak, but we have used mixed oak to some extent.

For the 16 years from 1900 to 1915 inclusive, the number of ties used per mile of all tracks averaged 238 per annum indicating an average tie life of 11.6 years. The average number of cross ties used per annum per mile of all tracks for the 10 years from 1918 to 1927, inclusive, was 120.4 giving an average tie life of 23 years. During the last five years, from 1923 to 1927 inclusive, the average number of ties renewed per annum per mile of all tracks was 94.5, which figures an average tie life of 34 years. This latter remarkably low figure is due partly to the fact that the first treated ties placed have not been in the track a sufficient length of time to reach their normal cycle. From the present indications it is my belief that the number of ties we will have to use in maintenance per mile per annum for the next two or three years will not exceed 100 and it is quite probable that the number will then increase until a uniform rate of somewhere between 110 and 135 is reached. A renewal of 111 ties is equivalent to a 25-year life and 138.5 per annum to a 20-year life.

Now, let us see whether our records to date indicate that we may expect an average life of 20 years or more. Up to January 1, 1927, we removed from all tracks a total of 174,897 treated ties. Of these, 118,805 were removed because of mechanical wear, 52,167 were destroyed in wrecks, derailments, etc., and only 3,925 were removed on account of decay. Of the latter, 110 were oak, 328 beech and birch, 1120 pine and 2,367 maple and gum.

During 1910 and 1911 we placed more than 800,000 treated ties. The total number of decayed creosoted ties removed from all tracks in 18 years has not amounted to one-half of one per cent of the treated ties placed in the first two years. Of the 170,972 ties removed from tracks on account of excessive wear, wrecks and derailments, 99,365 were re-used in minor tracks.

The Savings Effectuated

In determining the actual saving in ties, I call your attention to the fact that the average number of ties used per annum in maintenance on the Lackawanna from 1900 to 1915 inclusive was 579,090 and from 1918 to 1927, inclusive, 322,674. The total number of ties in all tracks for the 10 years from 1918 to 1927 inclusive, was 10.6 per cent greater than for the 16 years from 1900 to 1915 inclusive. Therefore, to make a fair comparison between the years 1900 to 1915 inclusive with the years 1918 to 1927 inclusive we must add 10.6 per cent to the average number of ties placed in the former years, bringing the total for that period up to 640,473.

For the last five years from 1923 to 1927 inclusive, the average number of ties placed per annum was 255,161, while the total number of ties in track during the five years in question was 11.8 per cent greater than between 1900 and 1915. Therefore, to make a comparison of the ties used in maintenance during the last 5 years with the 16 years from 1900 to 1915 inclusive we must add 11.8 per cent to the average ties in the track for the former years and we thus find a total of 683,326 as compared with the average of 255,161, thus showing a saving of 428,165 ties per annum during the last five years.

Likewise our records show that we used an average of 619 sets of switch ties per year from 1910 to 1917 inclusive, while for the nine years from 1918 to 1926 inclusive we used an average of only 353 sets. Prior to 1910 most of our switch ties were long leaf yellow

pine, purchased in the South, whereas since we started to treat local hardwoods we have been able to secure all of our switch timber local to our line.

The general data which I have given above should be sufficient to convince anyone that the Lackawanna has gained much by the treatment of ties. It is impossible to compile accurate figures as to the money saved. Nevertheless, by making certain assumptions one can arrive at an estimate of the final cost, including interest, of creosoted ties placed in tracks in 1910 in comparison with the cost of untreated ties from that date and spanning the same period. With such assumptions it is certain that the Lackawanna will have saved 93 cents on every treated main track tie placed in 1910. During the first six years we used an average of over 500,000 treated ties per annum, from which it will be seen that the amount saved has already reached a considerable figure. Using present prices this saving is increased to \$1.26 per tie, with the same assumptions.

Summary of Advantages

Some of the gains that we feel have been accomplished by the treatment of ties, aside from the reduction in the number of ties used, are as follows:

1. The treatment of ties has made it possible to utilize such woods as mixed oaks, beech, birch and maple, whereas such woods are practically useless for untreated ties. Such timber is still available in considerable quantity along our line; incidentally, the treatment of ties has given the farmer an additional outlet for this class of timber.

2. The total number of ties required has been so reduced that we are now able to secure most of our ties along our line; in fact recently, for a period of three years, we did not purchase any ties off our line. This is of great advantage in more ways than one. First it is important that ties cut for treating purposes are properly cared for in the woods along the right-of-way before shipment to the treating plant and when ties are purchased local to the line it is an easy matter for the railroad company's inspectors to instruct the sellers how to handle them. By keeping in close touch with the local tie producers our inspectors have been able to secure the necessary oak for switch and bridge ties so that we do not now have to use yellow pine for either purpose.

3. The reduced number of ties required for maintenance is a big help, especially in times of labor short-

age. The placing of cross ties is not the big job that it used to be and the men have more time for other work.

4. From the very start we have considered it essential to secure good ties, uniform in size. This is necessary in order to get uniform seasoning and uniform treatment. We feel that our campaign in this respect has been the means of providing a more uniform and better track.

5. Through the use of screw spikes and heavy tie plates, adopted for the purpose of prolonging the life of the ties, we have incidentally maintained a stronger and better track.

6. The 130-lb. rail that we are now laying in main tracks is laid on a canted tie plate. To secure a uniform bearing for these plates our principal assistant engineer, Mr. Neafie, has developed a tie-scoring machine by means of which all ties in the track are scored or sawed to a uniform depth on either side of the tie plates supporting the rail. Uniform ties that are full size are not marked, but those in which the old tie plates have seated are scored. The adzing of the ties can then be done uniformly with a certainty that all plates have a uniform bearing when laying new steel. This device saves work and makes it possible to do a better job of laying new rail. Its development was brought about entirely through our effort to save injury to creosoted ties already in service.

I have often been questioned about our low annual tie requirements during the past few years. Many do not seem to understand how it has been possible to bring about a condition where for a number of years in succession less than 100 ties per mile of all tracks are required in maintenance. It is a fact that many roads using creosoted ties extensively do not have as good a record. It is my belief that the reason for our showing is threefold, as follows:

1. From the start we went into creosoting in an extensive way. We endeavored to treat all ties for both construction and maintenance work, including white oaks, and excepting only chestnut ties, these being used in minor branches and sidings.

2. The care that was used in the purchase of good, uniform ties and the heavy treatment used, $3\frac{1}{2}$ gal. in all main track ties.

3. The use of big, flat-bottom plates with screw spikes and the boring and adzing of all ties before treatment.

In conclusion I desire to take this occasion to cor-

Comparison of Maintenance Ratios

Per cent of total operating revenue consumed by maintenance of way and structures expenses for the calendar years 1921 to 1926, incl., and the first ten months of 1927

Traffic Density (gross ton miles per mile of road per day—1925)	Carrier	1921	1922	1923	1924	1925	1926	10 Mo. 1927
31,562	D., L. & W.	11.66	10.56	8.68	8.94	9.97	9.67	9.95
36,045	C. & O.	14.65	12.62	12.61	14.39	15.24	14.22	14.33
33,205	N. & W.	14.50	13.80	13.00	15.14	14.36	13.63	13.80
32,824	P. & R.	11.51	10.59	10.19	12.26	13.17	13.84	13.93
28,826	Erie	12.45	11.88	10.76	11.64	11.40	11.41	12.46
25,948	Penna.	12.21	12.15	11.83	11.47	12.65	13.01	12.91
25,130	L. V.	10.35	11.33	10.29	11.02	11.52	11.40	11.48
23,252	N. Y. C.	10.16	11.41	12.01	12.55	13.67	13.49	14.10
22,413	B. & O.	12.41	11.61	11.49	11.87	11.97	12.49	12.12
21,038	C. of N. J.	12.34	11.18	9.86	10.92	11.43	11.25	9.34
11,433	N. Y., N. H. & H.	14.90	13.38	12.21	12.50	12.84	13.17	13.86
21,844	N. Y., C. & St. L.	11.25	11.73	12.41	13.44	13.35	12.85	13.05
20,552	C., C. & St. L.	11.70	.....	11.59	12.31	11.97	11.72	12.02
17,573	U. P.	11.32	11.11	12.34	12.43	11.61	11.51	11.95
17,021	I. C.	13.95	13.25	14.75	13.76	14.79	14.24	11.70
9,764	A., T. & S. F.	9.56	15.66	13.64	15.38	13.81	13.06	16.90
9,207	C., B. & O.	13.70	12.60	12.84	11.93	12.40	14.85	14.32
7,824	C. & N. W.	14.71	13.22	14.53	15.09	14.13	15.09	14.08
6,696	S. P.	14.39	12.98	13.28	13.53	13.28	13.71	13.18
15,214	L. & N.	15.90	13.92	13.40	14.61	14.29	14.76	15.16
9,454	Sou.	14.96	13.45	13.77	13.53	13.69	13.54	14.11
6,830	S. A. L.	11.69	11.73	13.35	14.70	13.47	13.41	12.26
7,920	A. C. L.	14.81	11.91	12.60	13.03	11.51	13.41	15.93

rect an impression that seems to have arisen that our screw spike experiment proved a failure. We have not discontinued the use of screw spikes. Our present standard tie plates weigh 20 lb. each. These tie plates are fastened to the ties by screw spikes independent of the rail fastenings, while our rail is held to gage through the tie plates and the base plate of our joint by means of raised shoulders on each side of the rail $\frac{1}{2}$ in. in height and $\frac{7}{16}$ in. in width at the top. Cut spikes are driven through these shoulders in pre-bored holes for the sole purpose of keeping the rail from rising out of the groove. These spikes also assist in holding the plates to gage, but the screw spikes are the fastenings upon which we depend to hold the gage and to prevent movement between the tie and the plate. I do not consider that our screw spike test, now 18 years old, has been a failure in any sense of the word.

I know of no fairer way to compare the maintenance of different roads than by the percentage of the total operating revenues consumed by maintenance of way structures expenses. I therefore submit the following comparison of the maintenance ratio for a few typical roads selected at random. You will note that the Lackawanna shows by far the lowest ratio of any of the roads in the table. There are few, if any, other roads in the United States that have shown maintenance ratios under 10 for five consecutive years. Whatever these figures may show, they at least do not indicate that the extensive treatment of ties and the use of screw spikes and other expensive track appliances to save mechanical wear of the ties has increased our maintenance expenses.

Freight Car Loading

WASHINGTON, D. C.

Revenue freight car loading during the week ended January 21 amounted to 884,095 cars, a decrease of 52,065 cars from the corresponding week of 1927 and of 37,548 cars from 1926. Loading of grain, livestock, less-than-carload merchandise and miscellaneous freight was larger than a year ago but coal loading dropped 56,731 cars from 224,504 cars in the corresponding week last year to 167,773. Loading in all districts was smaller than in 1927. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading Week ended Saturday, January 21, 1928

DISTRICTS	1928	1927	1926
Eastern	193,932	211,526	209,397
Allegheny	176,792	186,987	185,912
Pocahontas	50,058	59,452	54,786
Southern	145,101	152,375	147,735
Northwestern	108,609	110,007	113,391
Central Western	135,629	141,422	137,363
Southwestern	73,974	74,391	73,059
Total Western Districts	318,212	325,820	323,813
Total All Roads	884,095	936,160	921,643
COMMODITIES			
Grain and grain products	48,787	44,474	45,776
Live stock	33,473	30,828	30,791
Coal	167,773	224,504	180,837
Coke	10,544	12,497	18,321
Forest products	62,710	65,321	70,038
Ore	7,994	9,157	9,741
Merchandise, L. C. L.	243,118	242,836	247,196
Miscellaneous	309,696	306,543	318,943
January 21	884,095	936,160	921,643
January 14	906,734	942,731	931,735
January 7	754,062	933,890	907,622
December 31		679,600	734,281
December 24		829,006	768,040
Cumulative total, 3 weeks	2,544,891	2,812,781	2,761,000

The freight car surplus during the period ended January 15 amounted to 424,291 cars, as compared with

461,699 cars on January 7. The total included 207,980 box cars, 161,487 coal cars, 23,657 stock cars and 14,576 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ending January 21 totalled 63,786 cars, a decrease of 2,799 cars from the previous week but an increase of 5,829 cars over the same week last year.

Week ended	Total cars loaded	Total cars rec'd from connections
Jan. 21, 1928	63,786	35,496
Jan. 14, 1928	66,585	38,865
Jan. 21, 1927	57,957	37,222
Cumulative totals:		
Jan. 21, 1928	182,344	101,119
Jan. 22, 1927	174,485	100,997
Jan. 23, 1926	165,432	99,488

Forecast Decrease in Traffic

WASHINGTON, D. C.

A DECREASE of 2.3 per cent in the freight car requirements for 27 principal commodities in the first quarter of 1928, as compared with the corresponding quarter of 1927, is indicated in the national forecast issued by the Car Service Division of the American Railway Association, based on estimates and reports of trade conditions furnished by commodity committees of the 13 shippers' advisory boards with regional jurisdiction covering the entire United States.

Total requirements for the first three months of this year for the 27 commodities are estimated at 8,150,871 carloads, as compared with an actual loading of 8,342,533 in 1927. Increases ranging from 0.3 per cent to 13.9 per cent are indicated for 15 commodities, while decreases, ranging from 0.9 per cent to 30.7 per cent, are indicated for 12 commodities.

Estimates for seven of the 13 boards, the New England, Atlantic States, Great Lakes, Northwest, Central West, Pacific Coast and Pacific Northwest, show increases, while the estimates for six of the boards, the Allegheny, Ohio Valley, Mid-West, Trans-Missouri-Kansas, Southeast and Southwest, show decreases. The total estimate classified by commodities is as follows:

Advisory Board Classification		Total All Reporting Districts—Estimated per cent			
Item No.	Commodity	Carloadings		In-crease	De-crease
		Actual	Estimated		
1	Grain, all	346,366	341,068		1.5
2	Flour, meal & other mill products	226,741	233,530	3.0	
3	Hay, straw and alfalfa	100,150	94,255		5.9
4	Cotton	105,831	73,326		30.7
5	Cotton seed & products, except oil	103,477	72,476		30.0
6	Citrus fruits	40,775	35,972		11.8
7	Other fresh fruits	46,636	38,582		17.3
8	Potatoes	67,794	71,080	4.8	
9	Other fresh vegetables	60,510	56,466		6.7
10	Live stock	378,005	370,305		2.0
11	Coal and coke	3,173,078	2,980,428		6.1
12	Ore and concentrates	163,515	158,700		2.9
13	Clay, gravel, sand and stone (inc. gypsum, crude & powdered)	587,146	590,459	.6	
14	Lumber and forest products	959,385	962,467	.3	
15	Petroleum & petroleum products	515,096	537,868	4.4	
16	Sugar, syrup, glucose & molasses	41,825	43,862	4.9	
17	Iron and steel	472,795	466,363		1.4
18	Castings, machinery & boilers	61,311	60,736		.9
19	Cement	128,698	133,271	3.6	
20	Brick and clay products	150,011	159,540	6.4	
21	Lime and plaster	59,463	59,918	.8	
22	Agric. implements and vehicles, other than automobiles	30,791	33,084	7.4	
23	Automobiles, trucks and parts	195,518	219,950	12.5	
24	Fertilizers, all kinds	164,390	180,195	9.3	
25	Paper, printed matter and books	64,595	73,557	13.9	
26	Chemicals and explosives	63,974	68,662	7.3	
27	Canned goods—all canned food products (includes catsup, jams, jellies, olives, pickles, preserves, etc.)	34,117	34,751	1.9	
Total all commodities listed		8,342,533	8,150,871		2.3

Wabash Net Shows Sharp Decline

Earnings on common stock about \$1.75 per share in 1927, as compared with \$6.94 in 1926 or \$6.53 in 1925

A RECENTLY issued preliminary statement of the earnings of the Wabash for the year 1927 shows net income after interest and other fixed charges of \$4,763,610. This compared with \$8,217,488 in 1926 and with \$7,946,438 in 1925, which makes it appear that 1927 was decidedly an off year for the Wabash. The reduction in the 1927 net as compared with that of 1926 amounted to 26 per cent. The Wabash has three classes of stock; preferred A, preferred B and common. There is a very small amount of the preferred B outstanding. Both of the preferred issues are now on a 5 per cent dividend basis. The earnings on the common stock, after allowance for the dividends on the two preferred issues, amounted to about \$1.75 per share in 1927, as compared with \$6.94 per share in 1926 and \$6.53 in 1925.

Common Ranged from 40½ to 81

At present, Wabash common stock is selling for about 64. During 1927, this issue had a range in price between a low of 40½ on January 4 and a high of 81 on June 9. Its closing price for the year was 64¾; and it has not changed much in price since.

The Wabash's falling off in earnings and the present relative lack of interest in its stock represents conditions that rule quite generally with reference to the railroads and their securities, although it may be that in the case of the Wabash the situation is somewhat exaggerated. Thus, judging by the earnings statements of the past several months, we must expect that the annual report of the carriers, as they are successively issued in coming weeks, will show disappointing figures of net income and substantial decreases from the results reported for 1926. It is likely that the relative decrease in earnings will not be as great as that indicated by the Wabash. It is generally expected that the 1927 results, while less good than for 1926, will be about the same as in 1925. The Wabash, it was above remarked, showed in 1927 a substantial decline from both 1926 and 1925.

Merger Possibilities Made Stock Popular in 1927

Slightly less than a year ago there was a period of weeks in which the leading stocks of interest on the stock market were the issues of railroad companies supposed to be most likely to be participants in merger plans. The Wabash was particularly a case in point. It was for the time held in great speculative favor because it was looked upon as one of the key roads in L. F. Loree's proposed fifth trunk-line system in eastern territory. Merger possibilities have little if any interest to the stock market at the present time because of a realization that no consolidation progress is to be expected until new enabling legislation is enacted by Congress. Even disclosures at the recent annual meeting of the Lehigh Valley that the Wabash owned 46,700 shares of the anthracite carrier were passed up by the stock market as of secondary interest.

Under these conditions, other things being equal, one might suppose that Wabash stock would have reason to become more valuable with passage of the Fess-Parker bill or with reports of progress from the

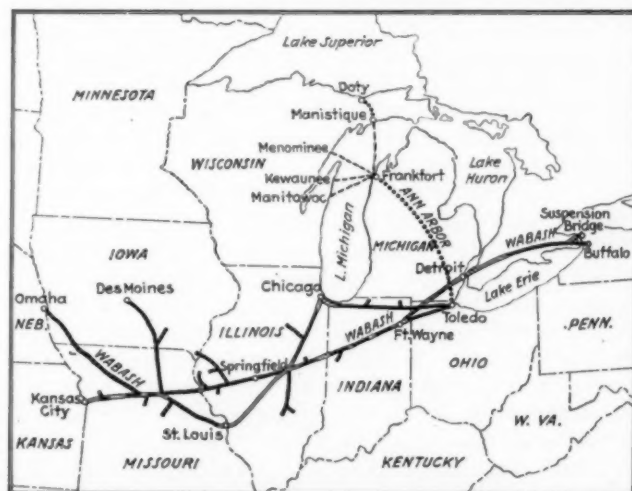
meetings of the trunk-line executives who are considering the allocation of the smaller roads in the eastern district.

Mileage and Operations

The Wabash operates a total of 2,524 miles, in addition to which it controls the Ann Arbor through ownership of a majority of the latter's stock. Its lines extend from the Niagara frontier to Chicago, St. Louis and Kansas City. A direct line between the first two enables it to compete on an even basis for the traffic between the two cities. The Wabash is the only road in trunkline territory which reaches west to Kansas City, and its line from the East to that important traffic center has the advantage of avoiding the crowded terminals of both Chicago and St. Louis. In the Ann Arbor's car ferry services across Lake Michigan it has traffic routes which reach the Northwest without passing through Chicago.

Territory Highly Competitive

The Wabash throughout nearly all its history has had the problem of competing with much stronger railroads in a highly competitive territory. In recent years it has gone a long way in the direction of solving that problem by the character of its service, with



The Wabash and the Ann Arbor

respect to which it has the advantage of having the short line between most of the important traffic centers, which it serves. The road has also benefited by having secured a share of the growing traffic to the increasingly prosperous southwest, which moves through St. Louis and Kansas City. Nor should one neglect to take into consideration the fact that the Wabash serves Detroit and has gained therefrom by receiving automobile traffic and tonnage in the other commodities that move into and out of the now prosperous industrial district of southern Michigan.

The relative depression in the automobile industry in 1927 presumably explains why the Wabash's decrease in net earnings should have been greater than that of most railroads. The year's traffic figures are not yet available. For the first ten months of 1927, as com-

pared with the first ten months of 1926, the Wabash's net ton-miles showed a decrease of 6.6 per cent, whereas the roads of the Great Lakes region showed a decrease of only 1.7 per cent, and the roads of the eastern district as a whole, a decrease of 1.4 per cent. In a comparison over a longer period the Wabash shows up somewhat better. Thus, the net ton-miles of the Wabash in the first ten months of 1927 were 15 per cent greater than in the first ten months of 1920, whereas the roads of the Great Lakes region showed an increase over the same period of 1920 of only 2.3 per cent and the roads of the eastern district an increase of only 0.8 per cent. It appears that the long-time increase in traffic on the Wabash has been in the higher grade commodities. The last annual report showed that in 1926 the Wabash moved 26 per cent more revenue tons than in the calendar year 1916, but the increase in manufactured and miscellaneous products was 66 per cent. The commodities in the last named category constituted 25.66 per cent of the total tonnage in 1916, but they constituted 33.87 per cent of the total in 1926. The increase in revenue ton-miles in this ten-year period was 21 per cent.

The Wabash cannot exactly be termed a prosperous property, because that designation cannot with propriety be applied to a carrier, the earnings position of which is such that it may suffer a decline in its net income from $8\frac{1}{4}$ million dollars in one year to only $4\frac{3}{4}$ million dollars in the next. It is true, nevertheless, that the road has been substantially improved in recent years both with respect to its earning capacity and its physical condition. It installed in 1926, for instance, over 20,000 tons of 110-lb. rail. It has recently made substantial improvements in the form of an enlarged mileage of automatic block signals, the color-light signals being used. A noteworthy improvement in its Decatur shops was recently made the subject of an extended article in the *Railway Age*.

Ton-Mile Earnings Low

From an operating and earning point of view the road does not seem to show the degree of benefit from its large proportion of high-grade freight that one might expect. Considering that in 1926 one-third of the total revenue tonnage was manufactured and miscellaneous products, it might be expected that the road would report a higher revenue per ton per mile than the average for the Great Lakes region. In 1926 the carriers of this region (in which the figures of the Wabash are reported) had a proportion of manufactures and miscellaneous products to total revenue tonnage of 26.35 per cent; and the average for the eastern district was 26.44 per cent. The Wabash reported for 1926 average receipts per ton per mile of 1.064 cents, whereas the average ton-mile revenue for the Great Lakes region was 1.107 cents, and that for the eastern district as a whole, 1.095 cents, the Wabash being considerably lower than the region or the district.

Operating Statistics

It is interesting to see how the large and growing volume of high-grade freight has been reflected in the road's operating statistics. It appears that in the first 10 months of 1927, the Wabash reported about the fastest train movement of any roads with which it might properly be compared. Only 4 roads bettered its average speed of freight trains of 15.5 miles per hour, and only a few showed a better improvement in operations than its increase of 60 per cent in gross

ton-miles per freight train-hour. However, it appears that the Wabash has been unable to effect the increase in its average freight train-load that many observers might feel desirable. The road's net tons per train in the first 10 months of 1927 were 645; in the same period of 1926 they were 689; but in the first ten months of 1920 the average net train-load was 705. As was pointed out briefly in the article on the Union Pacific, which appeared in these pages last week, the present trend in railroad operation seems to be in the direction of faster train movement, combined with heavier train loading. This trend has so worked out that the railroads have in recent years been able to handle an increase in traffic without increase in their train-miles and with a substantial decrease in their freight train-hours. In the first 10 months of 1927, in comparison with the same period of 1920, the Wabash moved 15 per cent more net ton-miles with 26 per cent more train-miles, but with 6.6 per cent less train-hours. In other words, it has saved on the time side, but has not been able to do so with reference to the weight of its trains.

It may be some such consideration as this, combined with the relatively smaller ton-mile receipts, which explains the Wabash's comparatively unsatisfactory ratios of operation. In 1926, it had an operating ratio of 73.18, and a transportation ratio of 36.65. In the first 11 months of 1927 these had become 76.4 and 38.8, respectively. The company suffers from having a large debit hire of equipment balance. Its ratio of net railway operating income to total operating revenues in 1926 was 17.5 (the same as in 1926) which compared with the average for the country of 19.0. In the first 11 months of 1927, the Wabash ratio of net operating income to total operating revenues was 14.2 per cent, as compared with the country's average of 17.9 per cent.

Conclusions

If the automobile manufacturers prove to be as prosperous in 1928 as they all seem to expect, it seems a reasonable conjecture that the Wabash should be able to do much better this year than it did last. From a general point of view, however, the greatest interest in the property seems to lie more in its merger possibilities—presuming favorable legislation—than in the earning power that it thus far seems to have been able to develop.

* * *



On the New York Central

Net Income and the Service of Supply

Some timely observations on railway purchase and stores operations as they affect profits

Marion J. Wise

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BUSINESS, no matter what its nature, has in common with every other undertaking two fundamental characteristics, income and outgo. The first is the measure of the earning power, and the latter is the measure of the expense necessary to produce the former. The difference between the two is the net income or deficit. This net income or deficit, representing the profit or loss for the period under consideration, is the measure by which the prosperity of a business enterprise is gaged.

There is no process of legerdemain or otherwise, appearances to the contrary notwithstanding, where more of anything is taken out of a hat than is put into it; and the same principle applies to any business enterprise. It cannot continue to spend more money than it takes in, and be in a prosperous condition. The cold facts are that the successful business is the one where the income exceeds the outgo by a comfortable margin, and the gage of its success is the size of the difference between the two.

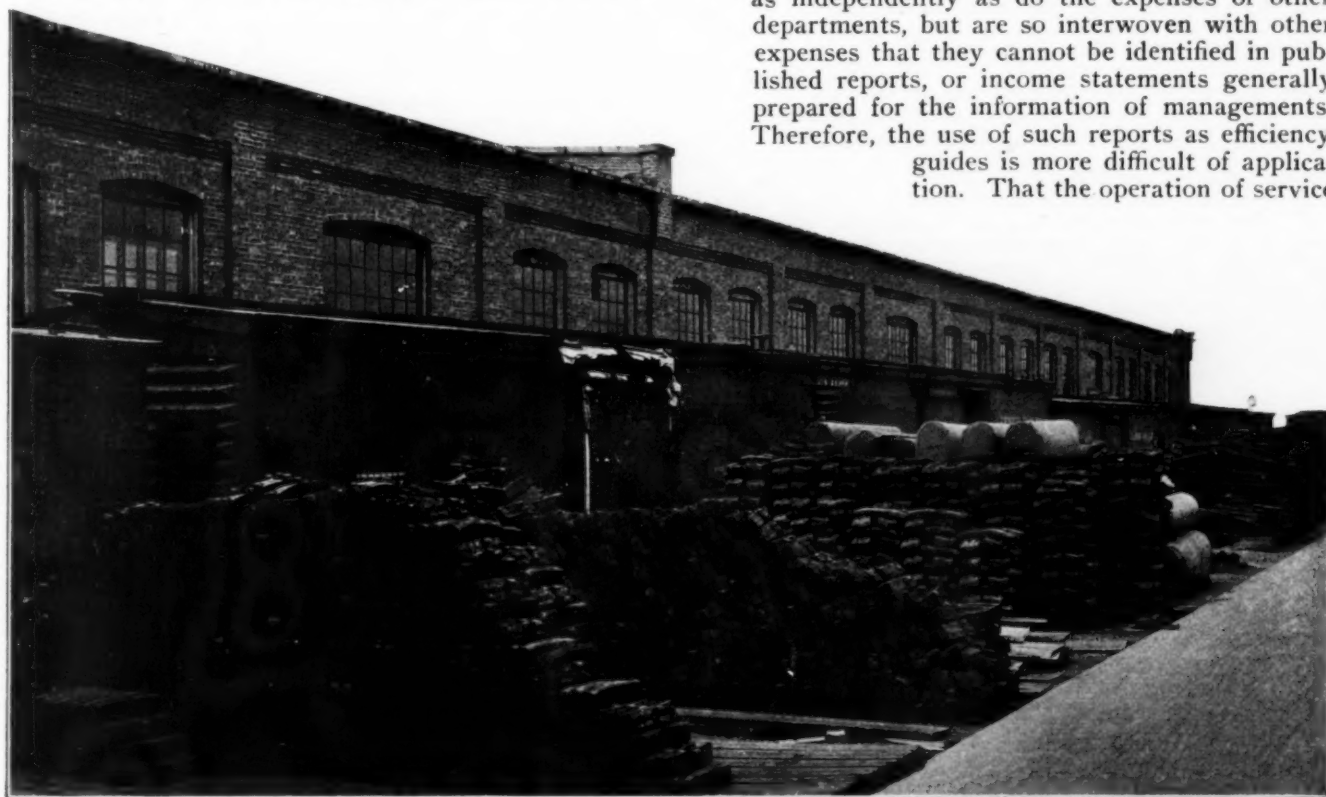
The net income of a railroad has no characteristics that differ fundamentally from those of any other business enterprise, although the processes by which it is determined may have more ramifications because the factors affecting both income and outgo may be more numerous. The final result is representative of the same thing. Railroad managements have for a long

time realized the value of careful accounting in the operations of their properties, both from the standpoint of producing revenues and controlling expenses. Certain standards of comparison and measures of efficiency have been determined therefrom, and these are all zealously watched, studied and used for the purpose of improving results. When such improvements have been made, their effect will always be found in net income, although to the casual observer they are not always discernible.

One phase of railroad operation, where the financial results are more or less obscured when viewed from the standpoint of net income, is that of the purchases and stores department, known as the service of supply, although its relation thereto is relatively of as great importance as the others. For this reason it may be helpful at times to direct particular attention to some of the factors in service of supply that are of real consequence as related to the net results of railroad operations.

Stores Efficiency

Expenses of other departments can be, and usually are, classified under accounts which indicate not only the nature of the expenses, but also the department by which they were incurred, so that by comparison their influence on net income may be readily gaged. The expenses of service of supply, however, do not stand out as independently as do the expenses of other departments, but are so interwoven with other expenses that they cannot be identified in published reports, or income statements generally prepared for the information of managements. Therefore, the use of such reports as efficiency guides is more difficult of application. That the operation of service



A Supply of Brake Shoes and Brake Beams on a Class I Road

of supply has, however, an important bearing on net income cannot be successfully denied, and the absence of summarized accounts necessary to gauge its influence on net income makes its relationship thereto none the less real. Because of its nature, expense of service of supply is a necessary part of the cost of the material handled. For this reason it is not practicable to provide specific accounts for the purpose of showing in income statements the extent of efficiency attained by that department. Managements, nevertheless, can and do obtain special statements of expenses and other data applicable to service of supply which, when prepared in comparative form, furnish them with a picture of the efficiency thereof as well as the effect service of supply operations have on net income. It is essential that these statements be as complete and illuminating as the importance of the operations justify, and it will not be amiss, therefore, to point out some of the more significant items affecting the efficiency and economy of operation of this phase of railroad management.

The account most commonly considered is the material and supplies balance. This, of course, is important as the volume represented has a direct bearing on net income when carrying charges on the cost of the supplies, deterioration, obsolescence, and handling and storage charges are considered.

Stores Expense

In addition to the current expense, commonly known as material stores expense, there are other important activities which, though not as easily determined, also materially affect net income. Some of the more important of these are:

(a) The making of favorable contracts, consisting of buying that which is needed under the most advantageous conditions and at reasonable prices.

(b) Conservation, consisting of making available for use material that would ordinarily be discarded or sold as scrap.

(c) Reclamation, consisting of reconditioning scrap and second hand material in such a manner as to make it of value for use, thus avoiding purchase.

(d) Sale of scrap, consisting of securing the best prices under the most favorable conditions of delivery, so as to allow the largest possible credit to operating expenses.

(e) Supply trains, consisting of operating supply trains in the most efficient and economical manner, both as regards the movement of the train itself, and to accomplish the purpose of satisfactory delivery of material to outlying points.

(f) Shop delivery, consisting of a scheduled delivery of material by the stores department to the shops for use, so as to avoid the necessity of high priced mechanics waiting for materials, and reducing the cost of delivery at the point of use to a minimum.

(g) Modern stores facilities and mechanical devices, consisting of providing those facilities and appliances which modern methods require for economical and efficient operation.

Inventories, too, may affect net income improperly. On the surface it may appear, and this probably is the generally accepted idea, that when inventory adjustments are made, no more has been charged to income than would have been charged if no errors had been committed. But the effect of such factors as improper pricing, careless counting of quantities on hand, and poor and inadequate records of material upon adjustments of operation expenses can be serious, and the most painstaking efforts should be exerted in these highly important matters, if net income is to be properly stated insofar as it is affected by this phase of the supply operations.

Loading and unloading of freight cars is not an operating expense charge but the average delay to cars affects either the net debit or net credit to hire of freight cars, which in turn affects net income so far as foreign line cars are concerned, as well as the available car supply for revenue freight traffic. Under this same heading comes the heavier loading of equipment and its conservation, the importance of which has been so well emphasized that mere reference to it is all that appears necessary.

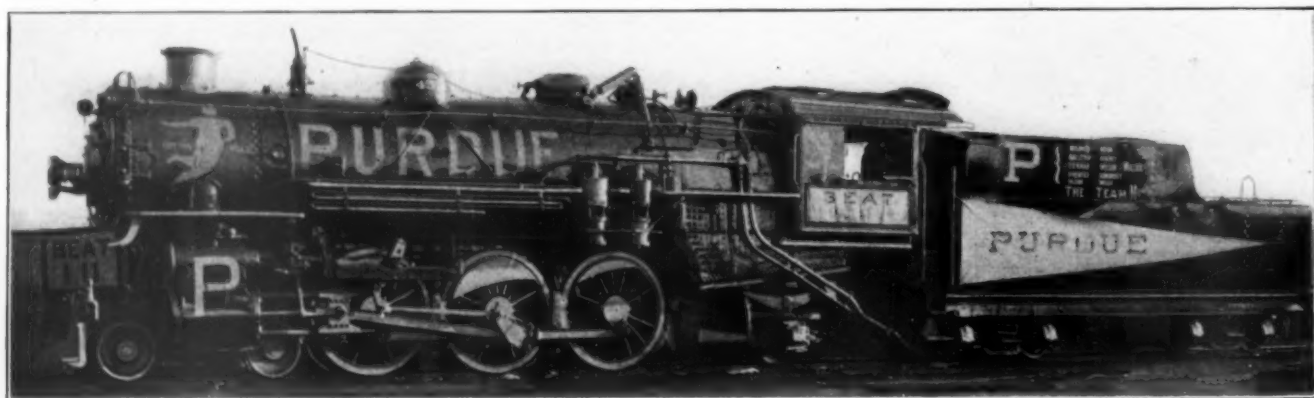
Efficiency and the Material Balance

While the material and supplies balance is not always a true measure of the efficiency of service of supply, it is certainly indicative. The comparisons given by the figures for the years ending December 31, 1921 and 1926, reflects the relative changes in the material and supplies balance and the other items tabulated for Class I railroads, as reported in the statistics of common carriers by the Interstate Commerce Commission:

	1921	1927	Per cent of inc. or dec.
Material and supplies	\$ 665,147,099	\$ 551,694,794	17.06
Railway operating revenues	5,516,598,242	6,382,939,546	15.70
Railway operating expenses	4,562,668,302	4,669,336,736	2.34
Net revenue from ry. operations ..	953,929,940	1,713,602,810	79.64
Net income	313,562,762	809,262,269	158.09

Carrying charges alone, figured on the basis of only 5 per cent, on the reduction that took place in material and supplies, amounted to \$5,672,615 and contributed in no small way to this favorable showing, to say nothing of the saving in such items as deterioration, obsolescence, taxes, handling and storage charges on the reduced balances, which would total as much again, if not more than the foregoing amount. Furthermore, additional working capital was released for other corporate purposes, with the consequent advantages accruing from the availability of this free capital. With the large increase in the volume of business, a glance at the foregoing figures shows clearly that, using the material and supplies balance only as an indication, the service of supply has played its full part in the increased efficiency of the railroads during the past five years.

* * *



Monon No. 451 Specially Decorated to Handle a Football Special

Practical Methods in Cost Studies*

*Function of a general accounting system should not be confused
with technical requirements of a costing system*

By Andrew Sangster
Consulting Accountant

IT was said in an earlier part of this discussion that in its most recent developments cost accounting is now an effective aid to executives in the problem of securing economies in production and also in determining prices and price policies. Reliable studies relating to operations in the factory have made it possible in numerous industries to develop standards of performance covering utilization of material, time elements for labor, use of equipment, and consumption of supplies, power or other services. They have disclosed the efforts on performance results of quality of material, grade of labor, working conditions, etc., which being duly taken into account furnish a basis for forecasting, with reasonable accuracy, the average costs of the different operations, provided always there is a schedule of current material and labor prices available. The last mentioned condition, it should be remarked, is not added merely as an afterthought; for in large scale production the question of prices may in fact be the crux of such a forecast, depending as it does upon many extraneous influences, the interpretation of which rests upon the experienced judgment of the purchasing officer.

Forecasts of Productive Costs

A forecast of costs must also give proper weight to the estimated volume of production, since that is a factor which has a direct bearing on many elements of production costs. Under practical business conditions the volume forecast may either represent an estimate projected upon the trend of past experience, or it may be given several progressive values between its most probable lower and higher limits in cases where prospective trade conditions are not so readily discernible. Those cost studies and production estimates may be used to determine the ratio of cost of manufacture to sales value, which ratio is always of vital interest when the subject of selling prices comes up for consideration.

In those industries where production is planned in advance for the month, quarter or some other period, studies of this kind enable the management to forecast with greater precision the aggregate of production costs which is to be financed out of working capital. The amount of factory payrolls to be provided, deliveries of material to be called for, and other classes of variable cost can be approximated to a degree close enough for practical purposes, the same as items of factory fixed charges. A more comprehensive forecast of the operations for the period in question includes the variable and non-variable selling expenses as well as the administrative charges, interest on indebtedness, and other income additions and deductions. When with the operating forecast there is prepared a corresponding program of proposed additions to plant facilities and other property, we have a complete picture of all the activities which are to be put in motion for that period of time.

* This is the last of four articles on the application of cost accounting to steam railway transportation. The other three and the issues of the *Railway Age* in which they appeared were as follows: "Cost Accounting and Its Problems," December 10, 1927, page 1157; "Recent Developments in Cost Accounting," December 24, page 1269; and "The Seasonal Problem in Cost Accounting," December 31, page 1331.

In other words we have a budget — an instrument evolved by modern methods of management, which is regarded as of the highest practical value.

The Budget as an Instrument of Management

So much has been written about the budget and its function in modern business administration that it is unnecessary to do more than point out certain features which are pertinent to the present discussion. From the accounting viewpoint in general it should be kept in mind that practical budget making relies very largely upon a well designed and efficient system of accounts—one that is properly adapted to the requirements of the business. The budget must place the responsibility for expenditures wherever it may rest in the organization, whether it be for shop costs, factory overheads, salesmanship activities, or otherwise; it must show the various items of expenditure in each division suitably classified and evaluated. The budget is therefore drawn up in line with the organization of the business, showing its various activities; and unless the system of accounts corresponds thereto there can be no effective control of actual expenditures. It is important to note also that the costs and expenses represented in the budget are predicated upon current or prospective conditions in the industry—that is to say the conditions which are most nearly applicable to the period covered by the compilation. From the management point of view, therefore, the budget is more serviceable as an aid to successful administration than an historical survey of similar scope, except as the latter may be used as a background of experience. Most important of all from the cost accounting standpoint is the fact that manufacturing cost studies constitute the basis upon which a large proportion of the budget expenses is determined—in many industries the major proportion. And as the principles and purposes of the budget become more extensively understood and practiced in the industrial field of business, the better it will be appreciated that cost studies are of the highest usefulness in that connection, even more than in the retrospect.

These same principles are quite generally recognized in rate cases involving the rates to be fixed for the service furnished by local public utilities. What the state commissions do is virtually to budget the costs and expenses of the utility, based upon the best available studies. One of the chief elements of cost in a gas case (water gas), for instance, is the cost of gas oil; the questions to be decided are the average number of gallons required per 1000 cubic feet—based upon certain standards of heat units, candle power, and on quality of oil—and the probable cost per gallon including freight and handling costs, to be determined from a careful estimate of market conditions. Similar studies are developed for "station" labor, supplies, amount and value of residuals, and so on down the list of manufacturing, distributing and general administrative costs and expenses. Telephone companies in the Bell System—and probably many of the independent companies also—

budget their capital expenditures and operating expenses, elaborate studies being prepared by the various departments for that purpose. And invariably they are requested by state commissions to produce them when the reasonableness of rates charged for telephone service is under investigation. Now, since it appears that the budget in business is an established principle, it is pertinent to inquire how far the railroads have progressed in applying these methods of administrative control to the business of transportation by rail, and to what extent they are predicated upon systematic cost studies.

The Budget in Railroad Administration

It is, of course, well known that the budget has been employed to some extent for many years by a number of railroads for the purpose of controlling expenses and effecting economies. It has been found practical to budget maintenance, traffic, and administrative expenses, which can be brought more closely under control than the transportation expenses; but the principle has for some years been extended to cover the latter also. For an authentic case we have an interesting description of the procedure and method adopted by the Illinois Central for budgeting its operations ("Illinois Central Budgets Transportation Expenses," *Railway Age* of March 5, 1927). The budget of that railroad is compiled along the lines already described viz.—on a careful and methodical survey of past experience and of the trend in current business. In particular, the budgeting of transportation expenses has been developed to such an extent in the last 15 years that superintendents are now able to predict, not only how much it will cost to operate their divisions for the ensuing month, but also how much traffic will move and how the expense will be divided as between the various transportation accounts. Mention is made of the fact that some railroads, notably the New York, New Haven & Hartford, find it practical to compile an annual transportation budget. ("A Plan for Budgeting Transportation Expenses," *Railway Age* of November 1, 1924, and "N. H. Transportation Budget," *Railway Age* of April 2, 1927.)

From the detail description of the Illinois Central budget procedure it is apparent that it reaches to the fundamentals of the operation of the road and its relations with shippers and patrons. The conditions peculiar to each month are carefully studied in order to provide for seasonal movement of passenger and freight traffic on each division; provision is also made for special business to be accommodated. Thus the personnel and equipment required to handle the traffic, the materials, supplies and other expenses, can be specified in terms of railroad units—man-hours of departments, number of cars, train-miles, ton-miles, quantities of fuel and other supplies, etc. Using current rates of wages and prices of material, these units are translated into costs; apparently the latter are aligned into well defined categories—variable, partly variable, and fixed. It should be possible, therefore, to determine how much the variable expenses will increase or decrease with anticipated fluctuations in volume of traffic. When we read how the division estimates are reviewed and discussed before being approved, it is evident that the budget is an integral part of the administrative work in the operation of the railroad—that is to say its status is officially recognized.

One particularly interesting feature in connection with these activities is the manner in which the budget system of the railroad is organized. Each division superintendent prepares an "estimate for the budget he will need for the coming month;" and divisional accounting

forces are organized in the office of each superintendent to give him currently a statistical analysis of his division. With a local accounting force available for the purpose the division superintendent should be in a position, therefore, directly to know day by day the performance of his division with respect to all those operations which he had covered in his budget, and to compare such performance with the standards set down as the basis of the budget. Thus can be shown every important element which may be brought within the scope of statistical analysis and comparison covering operations in that division. The local organization is assembling the data which show the cost of service operations from the practical viewpoint of the railroad manager—the data which, elsewhere in this discussion have been described as embracing the "direct costs."

The Railroad Budget and Its Cost Data

Accordingly, though we do not have first hand information as to what is comprised in the aforementioned data, we should expect to show the statistics and analysis of the operating department—in the transportation department, for instance, the three main activities—operation of trains, operation of yards, and operation of stations. Freight statistics would give number of tons; gross and net ton-miles; number of cars; train-miles, locomotive-miles and car-miles; train-hours; cars switched at yards; tons handled at stations; etc; man hours classified into operations would be shown by the payroll data. From these would be developed all those ratios disclosing efficiency in operation, including the all-important factors in train movement of gross ton-miles per train-hour, locomotive-miles per train-mile, pounds of fuel per gross ton-mile, train speed, and such like. There will of course be a complete correlation of money costs with the statistics to which they correspond, some separately or individually and some collectively; in the compilations of costs we should probably be in a position to observe average rates of pay for different classes of labor, prices of materials and supplies used in quantity, and like information. For comparative purposes the direct costs of the principle operations may be resolved into general averages reflecting cost per gross ton-mile and per net ton-mile in train movement, cost per car in switching, cost per ton in loading and unloading. Incidentally, we have to keep in mind that average costs are varying in their characteristic way each month in response to fluctuations in traffic volume. But however they are resolved or summarized, we shall find nothing—or practically nothing—to indicate how the average costs are to be associated with the transportation of particular commodities; nor should we expect to find it, for the simple reason that the cost of carrying one kind of commodity as against another in the diversified train load is not a practical question in the work of the operating department.

It is recognized, of course, that freight trains are not all of the same character but that perishable commodities, for instance, are handled in special trains moving at higher speed; it is also a familiar fact that certain cars in the ordinary freight train may require special care or servicing, rendering their freight more costly (in an obvious sense) to handle or transport. But even in those cases the separation of the respective costs from those pertaining to ordinary freight—in so far as it may be effected—still yields costs associated with trains or cars rather than with particular commodities. Naturally in all the circumstances, recited above rather imperfectly, the viewpoint of the railroad operating officers is that in furnishing freight services they are concerned

primarily with the movement of cars—made up into trains—from the point of shipment to the point of delivery; with regard to cost accounting doubtless their attitude is that its essential purpose is to provide timely and reliable information concerning the efficiency with which those services are performed, and to assist in effecting all possible economies. We can equally well appreciate why railroad accounting officers claim in answer to those who advocate cost accounting that the railroads do make cost studies in great detail.

The Budget as a Basis for Cost Studies

We had occasion to note, however, at an earlier stage in these discussions, that while current cost data may be indispensable to production and operating managers, it also has an important role in the problem of fixing prices. The great difficulty confronting the railroads in the way of using current operating cost data for that dual purpose is that, unlike corresponding data of a manufacturing industry, it is not in a form which can be applied readily to determine the direct cost element in the rate. And the converse of the problem is that in order to determine whether or not the rate charged is less than reasonable, it is at least necessary to know if such rate yields a margin over the costs directly involved in rendering the service, or whether it fails to meet those costs—a fact which has been already noted. In order to meet that problem either way the railroads would have to develop further their costs of service operations that the same may finally be translated into costs associated with revenue producing services. By this is meant that with respect to the operation of freight trains, for instance, the cost data pertaining thereto must be developed to show, at least, the average cost per ton-mile of revenue freight. An outline of the various steps necessary to get down even to such a general average cost was attempted in the first survey of this subject. But it is certain that general average costs of this type would not be sufficiently distinctive; for there are many factors to be taken into account, such as bulk relative to weight, type of car used and whether its use is limited in direction, special servicing required, and others, by which the freight may be roughly segregated into classes. Yard switching and station handling costs also raise questions relating to different classes of freight.

To find the most suitable basis for such studies the carriers would in all probability have to turn to the cost data originated by the divisional accounting forces in the form compiled for the budget. There the costs are directly associated with their related statistics, and the standards of performance shown for the various operations. It might be urged as a fundamental objection to the use of costs derived from the budget that they are merely estimates; but this cannot be sustained where the actual costs are shown in comparison, and where material discrepancies can be investigated and reconciled. Slavish attention to actual costs for the purpose of adjusting for every minor case of variance is not necessary. The force and effect of a real working budget will be better realized from the statement made by the chief of yard and terminal operation of the Rock Island system, H. R. Fertig, who says in the course of an admirable article recently printed in the *Railway Age* ("Close Supervision Cuts Yard Expense," issue of July 30, 1927):

"Under the budget system used on the Rock Island lines, the division officer has a daily check against the budget allowance for each yard on the division, and can take action immediately to keep the expense at the budget figure."

There is ample evidence too that railroad operating officers are systemizing their cost data in a manner that will make it still more useful for budget purposes. At the convention of Roadmasters' and Maintenance of Way Association held in Buffalo, N. Y., last September, (reported in *Railway Age* of September 24, 1927) the Committee on Collection and Use of Cost Data made certain recommendations in a report dealing with the principal requirements of the supervising officials. The report, which is essentially practical, recognized the cardinal principle of the budget in the following assertion:

"To get a true comparison of results it is necessary to establish standards of performance that make due allowance for modifying factors; that is to say, that reduce performances to a common basis. To simplify the situation a method of showing all performances on a percentage basis can be used. It is possible from the thousands of time studies that have been made on various roads to set up standard schedules for most classes of work."

Conditions Necessary for Cost Studies

In order to function in the most effective way those studies of costs by classes of service would have to be compiled by an organized force of employees specially trained for the purpose, in the same way that some of the railroads now center all statistical work in a special department. To that organization would be transmitted all of the statistical work and cost of service data originated in the division offices, and as a permanent department its work would be prosecuted continuously. To create a special department for such work would, of course, mean additional expense to the carriers, but that is the only alternative if they are to avoid criticisms of those sporadic studies heretofore made to determine costs in special cases or for certain classes of traffic. And in any case, satisfactory studies would inevitably call for periodic observations of service operations, in order to analyze some or other of the many composite factors involved. In that division of the work, however, a limited number of such observations of a specified kind would be made regularly at recurring intervals—and consequently under all practical working conditions—which would probably be more representative and trustworthy than an equivalent aggregate of observations covering a relatively short period of time.

But there is no object to be gained by attempting at this time further to outline the procedure by which those intricate cost studies would be put into action; the really important question is how far they could be developed by rational methods so that they would truly represent what they purported to show. It is impossible to give a complete answer to that question but it may be relevant to hazard the opinion from an impartial viewpoint that there is a field for research in these matters, as much as in the other branches of railroad activities, the development of which would prove beneficial to the carriers themselves. Even now they are challenged to refute successfully the assertion that repair shop costs exceed those of outside contract shops. But satisfactory progress in this cost research work depends upon concentrating on scientific methods of analyzing and resolving the original cost data and statistics compiled by the divisional field forces. The standardizing of those methods could be facilitated by active co-operation among the railroads through committees appointed for the purpose of dealing exclusively with costing problems, that is by committees composed of representatives from the departments specializing in cost research work. The opinion is further ventured that this research work would go far toward working out a satisfactory solution of cost problems. There can

be no denying the fact that the American Telephone and Telegraph Company has done invaluable service to the telephone industry by standardizing methods for the use of the Bell System Companies.

The Uniform System of Accounts

It will be evident that the objective which the foregoing discussion has emphasized will be reached only by gradual steps in the solution of cost problems; it will not be realized through any direct process of revising the uniform system of accounts. And we can, therefore, concur with the view expressed by railroad accounting officers that any attempt to attain the desired

result by the latter method is futile. Yet there appears to be no present scarcity of those or analogous plans; it may be reasonable to require the carriers to sub-divide on their own books some of the primary accounts, if the segregation of certain items would disclose information necessary for special purposes; such information would then always be available by means of those sub-accounts. At the same time there seems to be no real necessity for the creation of numerous sub-divided primary accounts in the uniform system of accounts. The function of a general accounting system should not be confused with the technical requirements of a costing system, especially where the latter involves intricate processes in its application.

Bureau of Mines Instruction Car

Embodies the latest facilities for instruction in the use of safety equipment

AN all-steel car has been designed and constructed recently for the United States Department of Commerce, Bureau of Mines, by Hotchkiss, Blue & Co., Ltd., Chicago, conforming to approved railroad standards and designed for use with several similar cars stationed in various mining districts throughout the United States, for the purpose of instructing mine operators and mine employees in the use and operation of mine safety equipment and first aid work.

The car has an overall length of 73 ft. 11½ in. with 49 ft. 1 in. truck centers, so designed that short curves on industrial and mine tracks may be negotiated easily. The underframe is of the fish belly built-up type, with Commonwealth Steel Company's cast steel cross ties and combined platform and double body bolsters.

The couplers are of the bottom operating D type, with cast steel yoke having quadruple shear tail pin. Miner A-5-X friction draft gears are used; also B-10-X friction buffers, safety locking center pin and side bearing rollers. The centering device and uncoupling arrangement were designed and made by Hotchkiss, Blue & Co.

Dual Heating Systems Provided

Six-wheel trucks are used, each truck frame and the pedestals being incorporated in a single Commonwealth steel casting. They are fitted with Simplex clasp brakes. The Klasing lever type hand brake upper unit is used, each vestibule having the housing for the sheave wheel cast integral with the buffer arm.

The car has a kitchen, help's room, dining room, bath room, office, sleeping accommodations and a large demonstration room, ample storage space and book cases.

Because of the severe and irregular climatic conditions which the car will meet, separate dual heating



View of Office Looking Into Bathroom

systems are provided. The Vapor system is used to control heat on either side of the car independently. A



New All-Steel Car Recently Built for the U. S. Bureau of Mines by Hotchkiss, Blue & Co., Ltd.

hot water system of heating is also provided, which is separate and independent from the Vapor system. This is composed of two type OCJ Peter Smith heaters, one located on each side of the car, with drums, filling valves and gages inside the heater rooms. These heaters are designed to burn either anthracite or bituminous coal.

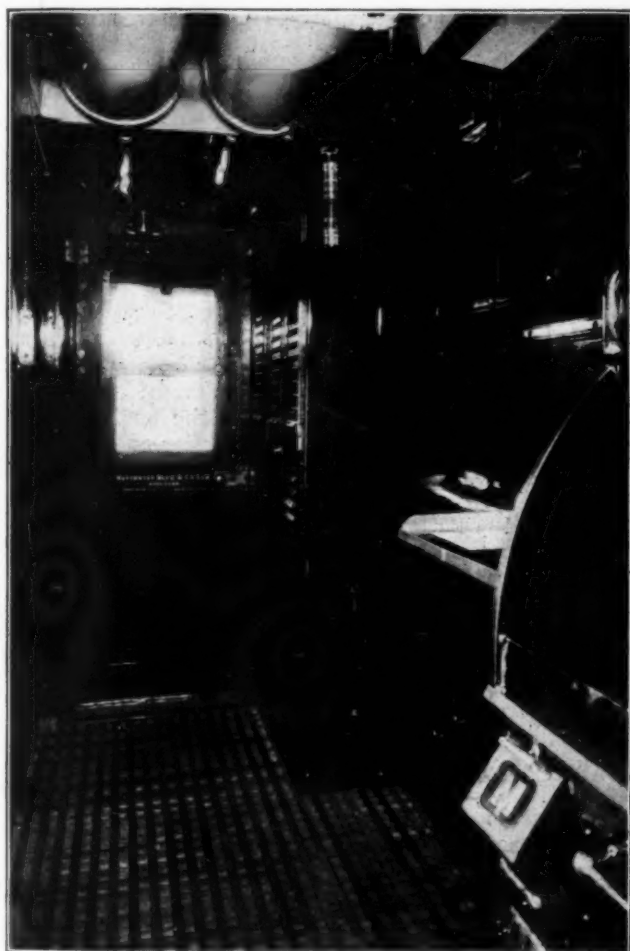
The electric lighting plant is a 1¼-kw. Delco (installed in the demonstration room) and a double set of Grant storage batteries, 32 volts. At times when the car is required to be at mines or towns for long or indefinite periods, 110 or 220-volt current may be utilized by plugging in on the mine or town circuits; for this purpose a General Electric Company type N form B transformer, with a Trumbell double throw switch is used.

The switchboard, especially arranged for either a. c. or d. c. current, was designed and furnished by the Safety Car Heating & Lighting Company.

The water raising system is serviced by two large capacity tanks under the car, and in addition, large over-

linoleum, except the kitchen which has a copper floor with removable slat tread sections. The upholstering is plain black leather. The interior finish of the car is mahogany; the ceilings are cream colored.

Special attention was given in the design of the car



The Kitchen Showing Overhead Tanks

head copper tanks in the kitchen. All water pipes are brass. For emergency to provide air pressure, a Curtis W-2 single stage motor belt-driven compressor is used, having automatic starting and stopping control.

A special pump for oxygen tanks is located in the demonstration room. Refrigeration is supplied by a ¼-hp. air-cooled, model G Frigidaire compressor and cooling coil. No ice is used on the car. All drinking water is filtered and supplied by Giessel sanitary water coolers.

The entire floor of the car is covered with battleship



Demonstration Room Showing Oxygen Tanks and Pumping Mechanism

to provide all space possible for locker and storage purposes. Special insulated metal lined lockers were provided for the storage of rubber apparatus and equipment used in handling mine gases.

Train Accidents in August

IN THE MONTH of August, 1927, the Interstate Commerce Commission investigated three collisions, four derailments and one other train accident (fire). The report on the derailment of train No. 28, on the Pennsylvania Railroad at Gallitzin, Pa., on August 29, was noticed in the *Railway Age* of November 12, page 935, and that on the accident on the Baltimore & Ohio at Cridersville, Ohio, on August 13, in the issue of December 17, p. 1210. The other six reports are abstracted below:

Pennsylvania, Terre Haute, Ind., August 5.—An eastbound freight, drawn by locomotive 8702, moving at about 12 miles an hour, was derailed at a cross-over and the locomotive was overturned; fireman killed and three other employees injured. This derailment was caused by the defective condition of a guard rail which had been installed about ten hours prior to the accident, and which had been passed over by nine locomotives during that time. Tests made with different engines on the next day showed, however, that two of the same class as 8702 failed to pass the guard rail safely. No. 8702 weighs 263,000 lb. with 49,700 lb. on the leading truck. The guard rail was of a type different from that formerly used, having a series of straight sides on

the throat side instead of curving gradually from one end to the opposite end. The report says that the situation disclosed in this case calls for a thorough inquiry by all railroads.

Chicago, Milwaukee & St. Paul, Sturtevant, Wis., August 12, 5:34 a.m.—A southbound mail train moving at high speed, was derailed by running through a No. 10 cross-over without slackening, and the locomotive was overturned. The engineman and fireman were killed and a large part of the train was wrecked. The train had been run from Tower A-68, about six miles north of Sturtevant, on the northbound track, with an order to continue on that track to Ranney, 10 miles beyond Sturtevant. After the order had been given, the dispatcher learned that the freight train, because of which the mail train had been diverted, had cleared the main track at Sturtevant and the mail train might cross at that point to its normal track; but it was then too late for him to recall his order. At Sturtevant, the operator having had some doubt about the position of the switches (815 ft. south of his station) because of the indications or lack of indications on his electric indicators, had sent H. L. Osborn, a former employee of the railroad, out to see if the switches were in proper position; but Osborn, knowing about the movement of the mail train on the left hand track, and because of his ignorance or confusion, turned the switch for the train to run through the cross-over. The conductor of the freight train, standing on the passing track, was nearby, but as operator Sturgis was in sight on the station platform, where he could see what was going on; and as the operator (for the purpose of making a test of the indicator) had been seen to throw the train-order signal to the stop position, the conductor made no objection to what Osborn was doing. The line is straight and the switch target is visible for a considerable distance. Operator Sturgis is held responsible; this because he delegated the duty of inspecting the switches to Osborn. Sturgis is also criticised for not placing his train order signal in the stop position when he discovered, or suspected that the electric indicator was not properly working. The report criticised the lack of discipline shown in the fact that switches were left unlocked. There is also a rule that trains moving against the current of traffic must approach all cross-overs under control, but officers of the road "interpret" this as applying only to cross-overs where cross-over movements are to be made; therefore the engineman of the mail train is not held blameworthy for not slackening speed.

Nashville, Chattanooga & St. Louis, Westport, Tenn., August 15, 5:07 p.m.—A southbound freight train—No. 330 of the Gulf, Mobile & Northern—having run nearly one-half mile beyond the station, and having encroached on the time of northbound N. C. & St. L. passenger train No. 103, was run into by the passenger train, and the engineman of the freight was killed; 82 passengers and nine other persons were injured. The locomotive of the freight was overturned and that of the other train was wrecked, and much other damage was done, the passenger train having been moving at full speed. The fault was wholly that of the engineman of the freight, the conductor having applied the brakes as soon as he saw that the station was being passed; but the inspector classes as a contributing cause, the failure of the front brakeman of the freight to go forward and flag the passenger train. When the freight engineman failed to enter the siding north of the station, he was reminded both by the fireman and by the brakeman and a minute later when the brakes were applied from the caboose, the fireman again informed the engineman that they must meet No. 103 at that point. The engineman,

however, proceeded, apparently intending to back into the side track from the south end. But after bringing his train to a stop and endeavoring to set back, he was detained three minutes or longer because of sticking brakes. The engineman told the front brakeman to go forward with a flag but the engineman appears to have been confused and is said to have told the flagman to watch for signals from the caboose (which was unnecessary) and the brakeman therefore was slow in getting started. The freight being inferior to the passenger train it should have cleared the main track several minutes earlier than the engineman was planning to clear it.

Chicago, Burlington & Quincy, Gregory, Mo., August 18, 9:36 p.m.—Southbound passenger train No. 10, consisting of a locomotive and four cars was derailed by a broken rail, while moving at about 50 miles an hour; two passengers killed, 18 passengers and two employees injured. The rail was found to have been weakened by a transverse fissure. The report says that the rails in this track, of 90-lb. section, had been sawed and relaid in 1917.

Cincinnati, Ohio, August 28.—On the tracks of the Central Union Depot & Railway Company, a short distance west of the station, at 9:41 p.m., passenger train No. 36 of the Baltimore & Ohio, moving west at about nine miles an hour, ran into the rear of a freight train of the Cleveland, Cincinnati, Chicago & St. Louis, which had been unexpectedly stopped, and the engineman and a flagman of a yard engine attached to the rear of the freight were killed; seven passengers and one employee were injured. This short section of track, about one mile long, is used by the trains of five railroads, and is operated at all times as a low speed line; that is to say, each train must be run with speed absolutely under control. The report lays the responsibility on the failure of the crew of the yard engine at the rear of the freight to afford proper protection, and on the engineman of the passenger train for not running under control. The men on the yard engine were not riding at the rear of the tender and, therefore, lost valuable time in preparing to flag the passenger train. The conductor is held equally responsible with the flagman. Good judgment would have required that this freight train movement be deferred until after the passenger train had passed; the freight had entered upon the main track only three minutes before the passenger train was due. The schedules of trains are criticised as being faster than they should be when the rule requires all movements to be made under control. Trainmen of the Baltimore & Ohio had not been examined on the rules of the local company.

Painesville, Ohio, August 30, 12:54 p.m.—Northbound passenger train No. 49 of the Baltimore & Ohio, consisting of a gas-electric motor and one baggage car, running very slowly, at the crossing of the N. Y., Chicago & St. Louis, was run into by an eastbound freight of the N. Y. C. & St. L.; and the pilot and the student engineman of the Baltimore & Ohio train were killed; three passengers and one employee were injured. There is no interlocking at this crossing and the freight was moving at low speed. The student engineman, for some reason not discovered, ignored the signal; but the report gives as a contributing cause, the failure of the pilot to be in a position to properly supervise the movement of the train. He was in the compartment back of the motorman's room. The student engineman had had 20 years' experience in engine service and this was his fifth and final trip in the course of his instruction as an operator of gasoline motor cars. The freight train had stopped for the crossing too far away—nearly 1375 ft.—whereas the law requires the stop to be made at 800 ft.

Plan New Long Island Terminal

Vice-president Le Boutillier tells of need for \$5,000,000 structure at Long Island City

THAT definite plans are under way contemplating the construction of a \$5,000,000 terminal for the Long Island at Long Island City, New York, to relieve the growing congestion of traffic at Pennsylvania Station, was indicated by George Le Boutillier, vice-president of the Pennsylvania and the Long Island, in an address delivered before the Broadway Association of New York City, January 26. Mr. Le Boutillier pointed out the growing need for a new terminal, but called attention to the fact that the Long Island has never earned as much as 5¾ per cent return and is not financially in a position to carry out the construction of the new terminal without increased traffic and increased rates. An abstract of his address follows:

Mr. Le Boutillier's Address

Both the Long Island and the Pennsylvania are intimately related to the growth and prosperity of this city and the development of the city itself has presented them with problems which are both complex and vital. Fundamentally we have the fact that tens of thousands of people look to the Long Island for daily comfort, convenience and safety in reaching their work and in returning to their homes.

In addition, insofar as the Long Island itself is concerned, 3½ million people in the territory stretching east of here for 125 miles, depend on this railroad for practically all the essential service which a trunk line railroad means to such a territory.

In order to visualize the tremendous growth of Long Island, it will be necessary to give you some figures during the course of my remarks, and I hope you will forgive me for that. They afford the simplest and briefest way to cover part of the story.

A careful study of the history of Long Island and the Long Island Railroad, covering the past quarter century, convinces me that there is one fundamental or outstanding reason why Long Island has a population today exceeded only by a comparatively few states in the Union, and continues to enjoy general prosperity from year to year.

Most of this healthy condition is due primarily to the fact that ever since 1900, when the Pennsylvania acquired control of the Long Island Railroad through stock ownership, it has manifested unbounded faith in the future growth and development of Long Island. It has constantly backed up that faith by investing many millions of dollars in modernizing the physical properties of the Long Island until it is now possible for this heretofore summer excursion line to handle, by means of safe, rapid and frequent steam and electric trains, an amazing volume of passenger and freight traffic. This is all accomplished on a railroad whose route miles of track is less than 400, and whose total trackage, including second, third and fourth track and sidings, approximates only 1,000 miles.

Let me give you a few interesting facts which show the extent to which Long Island has grown in relation to the city's activities, as evidenced by the development of business handled on the Long Island since the Pennsylvania came into the picture.

In 1900 the Long Island carried over 12¼ million

passengers. Last year it carried approximately 180 million passengers, which is an average per month almost as large as a whole year's passenger business at the turn of the century.

In 1900 the Long Island Railroad sold about 45,000 monthly commutation tickets, which means handling about 3,700 commuters daily. Last year more than a million monthly commutation tickets were sold, which means handling over 87,000 commuters daily. In other words, total passengers carried increased 9 times and commutation passengers increased about 25 times.

It is a well known fact that population follows transportation. Having reference to the preliminary report of the Suburban Transit Engineering Board, it is disclosed in their studies of the three sectors that the population in New Jersey has increased 45 per cent in ten years, Westchester 40 per cent, and Long Island 106 per cent; also that the New Jersey sector has nine railroads with 44 branches, the Westchester sector three railroads with 10 branches, and Long Island has one railroad with 12 branches. It is significant that the Long Island sector is the only one of the three that has had no special legislative representation.

Freight Traffic Increase

In 1900 the Long Island hauled a million and a half tons of freight. Last year the freight business was nearly ten million tons—eight times as great. Every 24 hours there are approximately 1,100 passenger trains and 25 freight trains operated on the system. When the clock strikes eight in the morning, there are 84 passenger trains moving on the line. You can readily see that, as an operating matter altogether aside from congestion, the problem is not a simple one.

I believe you will agree with me that the location of the Pennsylvania Station at Seventh avenue and Thirty-third street, has undoubtedly had a great influence upon the location of hotels, department stores, loft buildings, and small manufacturing industries, in the section north of Twenty-third street.

It may interest you to know that more passengers are handled at the Pennsylvania Station than at any other terminal in the Metropolitan district. I am speaking of Class 1, or trunk line railroads. In 1926 a total of nearly 55,000,000 passengers used trains arriving at and departing from Pennsylvania Station. In that same year nearly 44,000,000 passengers were handled at the Grand Central terminal.

During 1911, the first full year of operation at Pennsylvania station, the number of the Long Island passengers using that terminal totaled a little more than six million.

Although the complete figures for 1927 are not available, it is estimated that approximately 47,500,000 Long Island passengers were handled at Pennsylvania Station last year.

In the earlier year—1911—the Long Island carried more than 14,000,000 passengers in and out of its Flatbush avenue station, Brooklyn, and twice that number in 1927.

During the past twenty years the Long Island has

played a most essential part in distributing population. The figures which I have just given indicate the enormous traffic which has moved from the crowded sections of the city to the various communities on Long Island. It is significant that in 1926, of the total number of Long Island commuters, about 87 per cent of them originated from points within 25 miles of the company's terminals in the city.

To give you a better idea of the marked density of passenger traffic of the Long Island at Pennsylvania Station, it may be said that on a typical day, between the hours of seven and ten in the morning, we handle 75 incoming trains, carrying over 52,000 passengers. Leaving Pennsylvania Station in the afternoon, between four and seven o'clock, there are 74 trains with over 49,000 passengers. Every week-day there are 35 trains scheduled to arrive at Pennsylvania Station between eight and nine A. M.—that is more than one every two minutes.

During the war, and the "flu" epidemic, a stagger system was made effective on the rapid transit lines of the city. We have advocated this for the commuter lines, and stand ready to meet any reasonable demands to spread our schedules so as to permit staggering loads in the rush hours.

Ten per cent of all the passengers handled by Class I railroads in the United States are handled by the Long Island, and we have reason to be proud of the really marvelous way in which these huge demands are met at Pennsylvania Station.

Time for New Terminal

The time has arrived when the Long Island facilities at Pennsylvania Station are inadequate to take care of the rapidly increasing passenger business. The management must look toward Long Island for the establishment of a new terminal to relieve the congestion at Pennsylvania Station.

Long Island trains entering and leaving Pennsylvania Station must pass through the tubes under the East River. During the morning and evening rush hours, trains are being operated through the tubes at a minimum headway. During these hours the tunnels cannot safely accommodate more trains.

The construction of more tubes is not the solution of the problem. In the first place, the building of tubes requires years and a larger expenditure than could reasonably be undertaken.

The need for relief is immediate and the present earnings of the company make it impossible for the Long Island to obtain the necessary capital for so large an expenditure, especially at a time when it must spend vast sums for grade crossing eliminations, electrification of its lines within the city, and other mandatory improvements.

Secondly, the trackage facilities at Pennsylvania Station are not sufficient to accommodate more trains, and due to physical limitations cannot be increased to afford effective relief. The Long Island's passengers now represent 70 per cent of all passengers using Pennsylvania Station, and this traffic is increasing very rapidly, as is also traffic on the Pennsylvania.

The Pennsylvania has co-operated to the fullest extent in providing facilities for the Long Island Railroad at Pennsylvania Station. Changes and alterations have been made to provide the much needed space, but the time has come when the Pennsylvania cannot further limit its own needed terminal facilities and the Long Island cannot expect to receive any appreciable increase in space for the accommodation of trains or passengers.

Little Relief by Rapid Transit

Small immediate relief can be expected from the extension of rapid transit lines into Queens Borough. This extension has been slow and the burden of handling this intra-city traffic falls upon the Long Island, which has given freely of its resources to meet the problem. The completion of adequate rapid transit lines, is a matter of years. This intra-city traffic is growing rapidly, and the problem of handling it is augmented by the transportation demands of suburban Long Island which is shifting eastward.

The ultimate and inevitable solution of the problem of congestion at Pennsylvania Station is a new terminal. The Long Island believes it has chosen the logical and most advantageous site in Diagonal street, in the Queens Plaza district of Long Island City. The question at present is this: Shall the terminal be erected as soon as possible and furnish almost immediate relief, or shall its realization be postponed by needless delays due to differences of opinion and misunderstandings which should be readily composed?

The matter resolves itself into a question of time, and in the interim the Long Island will be compelled to operate under its present handicaps. The proposed terminal can be completed and in operation about one year after approval is given by the municipal authorities.

Due to the physical layout of Long Island the only branches that can be diverted to the proposed Long Island City terminal, and actually taken out of Pennsylvania Station, are the North Side and Rockaway Beach divisions. Trains from these branches do not pass through the general transfer point at Jamaica, and for that reason are the only trains that can be sent directly with their full loads to Long Island City.

Some Business Interests Opposed

There has been some opposition to this plan on the part of certain business interests in the vicinity of the Pennsylvania Station, based upon the belief that thousands of commuters would be taken away from this section. Let me assure these gentlemen that for every train taken out of the Pennsylvania Station and re-routed to a new terminal at Long Island City, another train loaded with people from Nassau, Suffolk, and the outskirts of Greater New York would take its place. The terminal we propose at Long Island City would have a capacity of about 25 trains an hour.

Fares on the North Side and Rockaway Beach divisions would be reduced by the use of the new terminal. Commutation fares on both the North Side and Rockaway Beach divisions would be \$2.20 less a month. Reductions ranging from eight to eleven cents would be made on single way tickets on the North Side division. Single fare on the Rockaway Beach division would be seven cents less and round-trip tickets fourteen cents less than at present.

Thus part of the great burden of intra-city traffic would be taken out of Pennsylvania Station, and all would benefit by the relief from congestion, improved service and more trains. To realize this end the railroad must, of course, be assured of co-operation to the extent of so arranging train schedules as to take these designated trains out of Pennsylvania Station and terminate them with their full loads at Long Island City.

Unless such assurance is given, the railroad would not be justified in going ahead with the construction of a \$5,000,000 terminal. Such assurance is the only guarantee the railroad can have that the terminal will

be permitted to perform the valuable function for which it is designed. The expenditure of five million dollars by the Company in its present financial condition, is a matter of such import that assurance of the success of the plan is absolutely necessary.

Will Include Subway Connections

The Long Island City Terminal proposal includes direct connections with the B.M.T., I.R.T. subways and Second Avenue Elevated. These lines will dead end at the terminal—that is, short extensions off the through rapid transit lines will be made to the railroad terminal. This valuable feature of the project assures railroad passengers of empty rapid transit trains and seats for all.

It is a fact not generally realized that without the financial aid of the Pennsylvania Railroad since 1900, the transformation of the Long Island from a line used largely during the summer months only to the great transportation machine that it is today, would not have been possible. The railroad now maintains an all-the-year-round service to all parts of Long Island. In addition to passengers it handles freight, express, mail, baggage, newspapers, milk.

In the process of bringing the Long Island to its present state of efficiency, it has been necessary to make large capital expenditures for the electrification of more than 127 miles of road; the elimination of over 300 grade crossings; standardization of roadbed and substitution of heavier rails; construction of new steel bridges; erection of many new passenger stations, and large purchase of rolling stock.

It is worthy of note, that last year the Long Island took out of service the last of its wooden passenger carrying cars, and thereby became the first Class 1 railroad in the United States to place its passenger carrying equipment upon a 100 per cent steel basis. Every one of the 1,430 passenger cars owned and operated, is of steel construction.

To Spend \$57,000,000

It bears repeating, that a railroad in a growing territory, is never completed. To keep pace with the demands made for improvements of one kind and another, during the next five years, it will be necessary to spend approximately \$57,000,000. In addition to this the railroad must meet obligations to the amount of more than \$10,000,000, which mature between 1928 and 1931, and besides is confronted with the necessity of financing its floating debt of nearly \$14,000,000. So that it will be seen that the railroad will require a total of approximately \$81,000,000 in the next five years for capital improvements and to meet other obligations.

Most of these funds must come from the investing public whose savings must be attracted by earnings. Thus far the company has failed to earn anywhere near the 5¾ per cent return fixed by the Interstate Commerce Commission for rate-making purposes. The company has not paid any dividends for the last 30 years. All its net income has been spent for improvements and to help pay its debts.

It is proposed to finance the improvement expenditures contemplated in the next five years and to fund maturing securities and floating debts by issuing bonds, equipment trust certificate preferred and common stock to the amount of about \$81,000,000. This will improve the capital structure by reducing the proportion of debt from 68 per cent to 55 per cent, and increasing the proportion of stock from 32 per cent to 45 per cent. In order to meet the increased fixed charges due to this financing, the Long Island Railroad

must secure additional revenues from two sources. First, increased business and, second, increased rates.

Need Increased Rates

Unless the increased commutation rates are granted, it will not be possible to meet the increased fixed charges growing out of the financing of the proposed improvements, and they will have to be deferred or materially reduced. With the increase in rates the return on the investment of the Long Island in road and equipment on December 31, 1931, will be only 5.4 per cent as against the Interstate Commerce Commission's figure of 5¾ per cent as a fair return. Without an increase in rates the return would be only 4 per cent.

Certainly no responsible management could embark on a huge improvement program with the prospect of this latter inadequate return, nor could it hope to get the public to subscribe to the full amount of new capital required.

Wants Competitive Bidding for Securities Reconsidered

COMPETITIVE bidding for railroad securities should be thoroughly reconsidered before the Interstate Commerce Commission makes this practice a permanent institution, in the opinion of Ernest L. Nye, of Freeman & Co., equipment trust specialists of New York, who has announced that he is prepared to seek support on this point from more than 2,000 dealers in securities throughout the country.

Mr. Nye asserts that negative factors have come into the situation which nullify the benefits predicted for the practice of competitive bidding when first tentatively adopted by the commission. Mr. Nye said:

"Due to extraordinarily easy conditions in the money market, banking firms have been basing bids in competition for equipment trust securities on a narrow margin of profit not at all commensurate with the services performed or the banking risk entailed through a possible reaction in bond prices with the corresponding loss which such an eventuality would produce.

"As a result, equipment trusts have been offered at prices which many of the former large buyers of car trusts, such as insurance companies, have not hesitated to call excessive and out of line with the market. The small investor and less experienced buyer has been invited to pay prices for equipment trusts which the large and better versed purchasers of these securities consider to be above the market and in fact the large buyer, by avoiding the original offering, has been able to wait out a situation and make a 'close out' bid at a lower price for an unsold balance, which more than once has remained on the shelves.

Overpricing

"The actual sufferer, therefore, is the small investor or the very individual the protection of whose interests has appealed most strongly to the governmental authorities. If the protection of the investor has not been accomplished during a rising and very favorable bond market, there is much less likelihood that the investor will benefit during a period of declining prices. For at such times not only is the large institutional buyer unwilling to purchase offerings unless priced exactly on current market conditions, but his experience even then causes him to hold back because of his expectation of lower prices for all investment securities.

"Another phase of the recent marketing of equipment trusts, in addition to the over-pricing of offerings, seems to be a willingness at times to offer equipment trust securities which do not exactly conform to the conditions established as correct equipment trust procedure. If an issue is offered, for example, with the maturities deferred from three to four or five years, so that there is not ample provision to cover the depreciation of the equipment pledged, experienced houses avoid the purchase of such issues by sending in low bids or not bidding at all, and the real sufferer again is the investor who probably purchases on the erroneous belief that one equipment obligation is as safe as another.

"A few years ago an open hearing was held at Washington before the Interstate Commerce Commission to determine the advisability of competitive bidding as applied to the sale by railroads of equipment trust securities and following this hearing came the announcement of competitive bidding under what was believed to be at the time more or less of an experimental procedure.

"Testimony given at that time by representatives of leading banking houses, established the opinion that competitive bidding would in all probability result in the railroads receiving higher prices for equipment trust securities but that certain other negative factors might later enter into the situation which might in time perhaps tend to nullify the price benefits to be received.

"A growing opinion in the banking fraternity that certain of these negative factors actually have come into existence and that some modification of the present situation would be wise and beneficial to all concerned has been given impetus during the past few days through the methods recently employed by two large and very well known railroads in handling proposed equipment trust financing. These roads sent out letters to a number of banking houses inviting bids on several million dollars of equipment trust securities and stipulated that separate bids were to be entered for securities bearing 4, 4¼ and 4½ per cent coupons. Having received bids in accordance with the terms of the invitations sent out, both roads notified the bidders that it had been decided to reject all bids submitted in response to the letters sent out and publicly to invite bids for equipment trust certificates bearing 4 per cent coupon exclusively. Our firm and associates went to considerable effort and some

expense in organizing a banking group to bid and because of the unsatisfactory outcome, declined to bid at all on the new 4 per cent security.

"The sincerity of the position of the Interstate Commerce Commission in the present situation is unquestioned, but it is believed that competitive bidding, having been given a fair trial, should again be thoroughly considered before being regarded as a permanent institution."

Asks Expression of Opinion

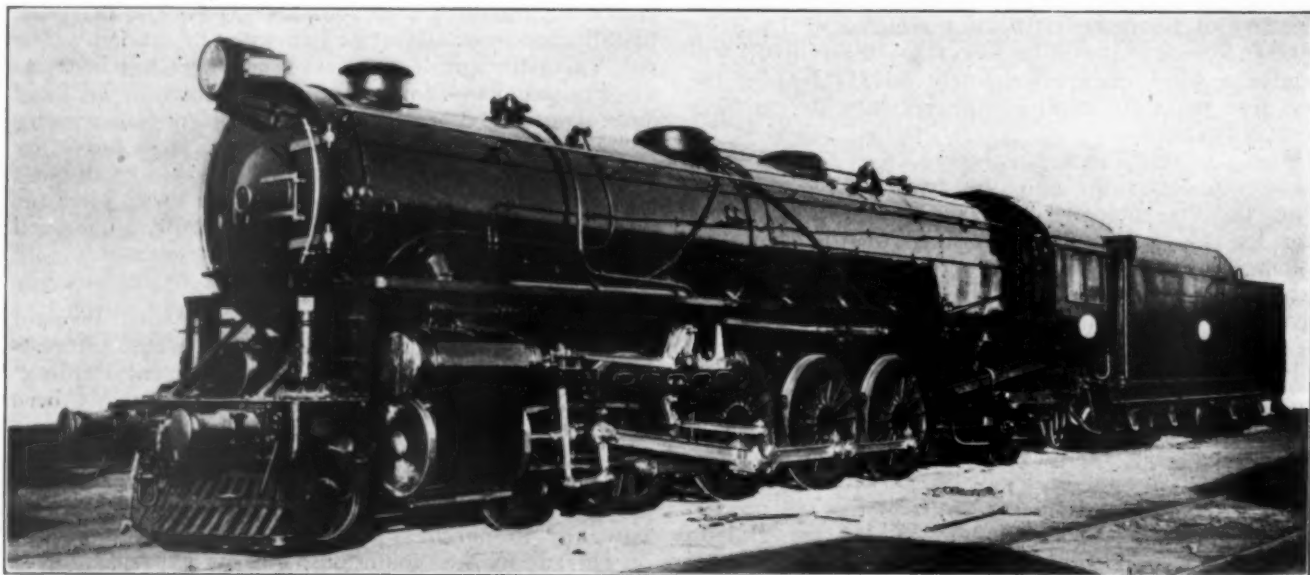
Mr. Nye has addressed a letter to dealers in railway securities in which he has asked for an expression of opinion regarding competitive bidding. In this letter he said in part:

"Claims have been made that severe overpricing has been one result of competitive bidding, causing a growing attitude of disfavor on the part of many large former purchasers of equipment trusts. Another detrimental feature recorded has been the narrow distribution effected by dealers, due to the close margin of profit, a situation which may prove costly when less favorable conditions govern the markets. Again certain car trusts have been issued under unusual provisions and with less regard than formerly to the definite procedure which years ago caused equipment trusts to be regarded as almost the safest type of corporate obligation.

"That the railroads have been receiving exceptional prices for car trust obligations is not to be denied and it may be that this feature more than balances the negative factors mentioned above.

"As specialists in the marketing of equipment trusts, we are interested in ascertaining so far as possible the prevailing opinion in financial circles throughout the country regarding the policy of competitive bidding as applied to the sale by the railroads of car trust securities. We agree with the commission that protection of public interest is the first consideration and therefore we feel that before the experimental policy of competitive bidding for railroad securities becomes a permanent institution, a further study of results to date would be of value to all concerned. If it is not asking too much, we would greatly appreciate an expression from your house on the subject."

* * * *



Mountain Type Locomotive on the South Australian Government Railways, 5 ft. 3 in. Gage, Tractive Effort, 51,000 lb.

Eight-Wheel Switchers for B. & M.

Develop tractive force of 56,800 lb. with a boiler pressure of 250 lb.—Have feedwater heaters and articulated main rods

TEN eight-wheel switching locomotives, designed for a boiler pressure of 250 lb. and equipped with feedwater heaters, articulated main rods and snow melting devices, have been received from the Baldwin Locomotive Works and put in service by the Boston & Maine at various yards to further expedite freight service and to effect new economies in operation. These locomotives have released an equal number of less modern eight-wheel switchers of lighter tractive capacity for assignment to other yards, this reassignment, in the end, retiring several of the least modern and effective yard locomotives.

The assignments were made to get the utmost benefit out of the increased tractive force and the fuel saving devices on the engines. The Boston & Maine expects to realize economies both from the latest improvements with which these locomotives are equipped, and from the ability of each unit to do a greater amount of work in a given time.

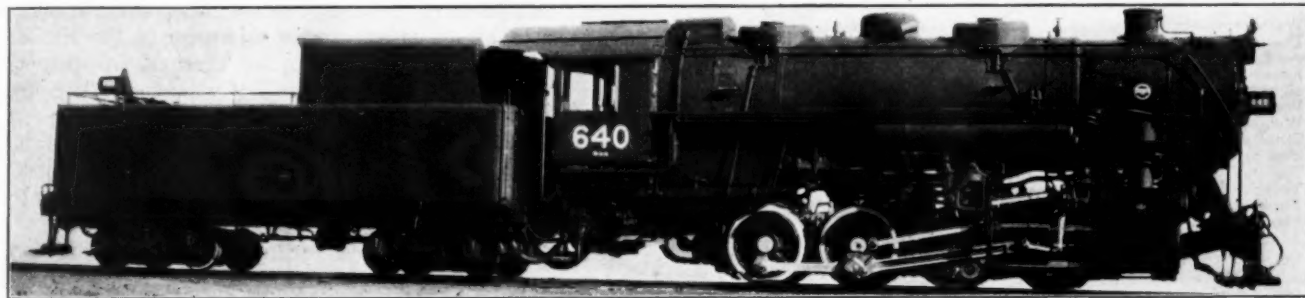
These locomotives are designed for operation on grades up to $1\frac{1}{2}$ per cent, and curves as sharp as 19 deg. With a weight of 244,800 lb. on the drivers, the

The piston valves are 12 in. in diameter and have a maximum travel of $8\frac{1}{2}$ in. and a lead of $\frac{1}{8}$ in. The steam lap is $2\frac{5}{8}$ in. and the exhaust lap is $\frac{1}{8}$ in. The Baker valve gear is applied, and is controlled by a Ragonnet Type E, reverse mechanism.

Special materials are largely used for the machinery parts with a view of insuring ample strength for severe service, with minimum weight. The piston heads and the piston valve bodies and followers are of electric cast steel. Chrome-vanadium alloy steel, quenched and tempered, is used for the piston rods. The crank pins are of chrome-vanadium normalized steel and are hollow bored. The main driving axle and the main and side rods are of carbon-vanadium normalized steel. The axle is hollow-bored.

A forked main rod provides direct connection to the rear wheel crank, transmitting a portion of the piston thrust directly to the rear wheel, thus relieving some of the strain on the main crank pins and main journals. Main and side rod bushings are of the floating type to decrease wear.

The steam turret is arranged to permit all valve op-



One of the Boston & Maine Eight Wheel Switchers Equipped with a Limited Cut-Off, Feedwater Heater and Articulated Main Rods

engines develop a starting tractive force of 56,800 lb., the ratio of adhesion thus being 4.3. Such a ratio permits the development of full tractive force without slipping, under average rail conditions.

These locomotives have straight top boilers with wide fireboxes. The working pressure is 250 lb. On eight of the locomotives, the brick arch is supported on four tubes; while on the remaining two, the arch is carried on two tubes and two Nicholson syphons. A Type A superheater is applied, and the tubes and flues are welded into the back tube sheet. Flexible staybolts are applied in the breaking zones.

The boiler accessories include a feedwater heater of the Coffin type, with the feed pump placed on the left side at the rear end of the locomotive. On the feed pump delivery line is a fitting for attaching 50 ft. of 2-in. fire hose, which is carried on each engine. The feedwater heater is located at the front of and flush with the outside shell of the smokebox.

The ash pan is of cast steel and is fitted with hot water piping for washing the ashes off the side slopes.

These locomotives are designed for limited cut-off.

erating handles to be placed on one control board in the cab. All of the dial gages are similarly localized on one board for ready reference.

Each of the locomotives is equipped with snow melting devices which are located below and in back of the front bumper beam. These devices consist of live steam nozzles on four cylindrical drums, one on either side of each rail.

Flanged tires are used on all the wheels of these locomotives. Flange oilers are applied to the front and rear drivers. The transverse distance between tire faces is $\frac{1}{8}$ in. less on these wheels than on the main and intermediate pairs. The cylinders are oiled by a force feed lubricator, driven from the valve motion.

The tender is carried on rolled steel wheels, and has a Commonwealth cast steel frame. The tank has a straight top and the side walls of the fuel space curve inward, following the contour of the cab roof, in order to give the engineman the best possible view when backing up.

Details of dimensions, weights and proportions are given in the table on the following page:

Table of Dimensions, Weights and Proportions of the Boston & Maine Eight-wheel Switchers

Railroad	Boston & Maine
Type of locomotive	0-8-0
Service	Switching
Cylinders, diameter and stroke	23 in. by 28 in.
Valve gear, type	Baker
Valves, piston type, size	12 in.
Maximum travel	8½ in.
Outside lap	2¾ in.
Exhaust clearance	¾ in.
Cut-off in full gear, per cent.	60
Weights in working order:	
On drivers	244,800 lb.
Tender	176,200 lb.
Wheel bases:	
Driving	15 ft.
Rigid	15 ft.
Total engine	15 ft.
Total engine and tender	54 ft. 10½ in.
Wheels, diameter outside tires:	
Driving	51 in.
Journals, diameter and length:	
Driving, main	11½ in. by 12 in.
Driving, others	10 in. by 12 in.
Boiler:	
Type	Straight top
Steam pressure	250 lb.
Fuel, kind	Bituminous
Firebox, length and width	102½ in. by 66¼ in.
Height mud ring to crown sheet, back	73½ in.
Height mud ring to crown sheet, front	75½ in.
Arch tubes, number	4
Tubes, number and diameter	36—5½ in.
Flues, number and diameter	226—2 in.
Length over tube sheets	15 ft.
Grate area	47 sq. ft.
Heating surfaces:	
Firebox	190 sq. ft.
Arch tubes	24 sq. ft.
Flues and tubes	2,538 sq. ft.
Total evaporative	2,752 sq. ft.
Superheating	608 sq. ft.
Comb. evaporating and superheating	2,360 sq. ft.
Special equipment:	
Brick arch	Yes
Superheater	Type A
Feedwater heater	Coffin
Tender:	
Style	Rectangular
Water capacity	10,000 gal.
Fuel capacity	13 tons
General data estimated:	
Rated tractive force, 60 per cent cut-off	56,800 lb.
Weight proportions:	
Weight on drivers ÷ total weight engine, per ct.	100
Weight on drivers ÷ tractive force	4.29
Total weight engine ÷ comb. heat. surface	72.6
Boiler proportions:	
Tractive force ÷ comb. heat. surface	16.9
Tractive force × dia. drivers ÷ comb. heat. sur.	862.
Firebox heat. surface ÷ grate area	4.55
Firebox heat. surface, per cent of evap. heat. sur.	7.77
Superheat. surface, per cent of evap. heat. surface	22.1

WHISTLE NUISANCE ABATED.—Complaints of the noise of locomotive whistles at a crossing of the Boston & Maine in Beverly Farms, Mass., heard before the Massachusetts Department of Public Utilities on January 17, were settled by the road agreeing to install a bell at the crossing to warn the gateman of the approach of trains; half of the \$1000 cost being paid by the residents in the vicinity of the crossing, and the installation of the bell to be followed by discontinuance of the locomotive whistle signals. This crossing is on the Gloucester branch, and is used by 16 southbound trains each week day. It appears that the northbound trains have not given the whistle signal for this crossing.

* * *



All-Steel Caboose Built for the Santa Fe by the American Car & Foundry Company

Chicago Section A. S. M. E.

THE American Society of Mechanical Engineers, Chicago Section, devoted its January program entirely to railway subjects, meeting Friday evening, January 20, at Fullerton Hall, the Art Institute of Chicago and being addressed on the following topics: "Railroad Valuation" by Samuel O. Dunn, editor of the *Railway Age*; "The Human Element in Railway Work" by L. K. Sillcox, assistant to the president of the New York Air Brake Company; "New Motive Power Developments" by G. Hall Roosevelt; and a discussion of "European Developments" by C. B. Page, manager of the Steamotor Company, Chicago.

Mr. Dunn discussed the question of railroad valuation with particular reference to the O'Fallon case, pointing out that the effect upon freight rates anticipated as a result of giving reasonable weight to reproduction costs is largely exaggerated and maintaining that the commission's method of determining valuation is both unfair and economically unsound.

In a short but carefully developed paper, Mr. Sillcox outlined the qualities necessary for successful leadership and indicated that an intensive training and development of the latent executive ability of railway officers and foreman is essential. He said that after many obstacles to the establishment of a successful organization have been overcome, the fatal mistake is made of being too impatient for results and consequently not giving the new organization a fair trial. Throughout his talk, Mr. Sillcox emphasized the importance of the individual and said that in many cases proper attention to the human element has enabled results to be secured in spite of serious mechanical handicaps. He warned of the loss which any company sustains when experienced employees are replaced by new ones if at all avoidable and made an urgent plea for reduced unit cost of producing transportation as the only means of permanently raising wages.

Mr. Roosevelt reviewed recent developments in motive power, laying particular emphasis of the flexibility, reliability and availability of the Diesel and gas-electric types. He said that the present high efficiency and productive capacity of the automotive industry have been made possible by the ability to write off obsolete machinery and equipment, and a parallel with the case of the railroads which must have earnings sufficient to permit adequate obsolescence accounts in order to replace antiquated motive power with modern designs better adapted to meet present operating conditions.

Mr. Page gave the members an outline of Diesel engine developments in Europe with four types of transmission, including hydraulic, pneumatic, electrical and mechanical, stating that the latter is at the present time the most popular. He said that, following the war and in the absence of locomotive orders, German engineering staffs were largely released for experimental work, fostered and to a considerable extent paid for by the government. This explains the many different types of motive power now being developed abroad, most of which at the present time utilize high pressure steam in turbine or combination piston and turbine locomotives. Mr. Page said that 20 years ago the Walschaert valve gear, then used in Europe, was considered too complicated for American requirements but has since come into extensive use in this country. He suggested that some of the present European developments, now considered visionary, impractical and unfitted to American needs, may within the next 10 years become as familiar as the Walschaert gear now is.

Communications and Books

Pricing Material in Storehouses

WEST OAKLAND, Cal.

TO THE EDITOR:

The railroads that have adopted unit pricing systems of operating stores have received many criticisms. To make the stockmen the price clerks, was objected to as adding just so much more office work to their duties. It meant pricing and classifying each and every item and putting the prices on requisitions before completing the billing. It was feared that the system would slow up the shipping.

These fears have proved groundless. Under the pricing system now effective on the Southern Pacific, invoices covering material shipped from the general and district stores show the price and class of each item. These priced invoices have one advantage over the non-priced invoices. Before the system was adopted, we had no conception of the value of railroad material. The dollar mark on those invoices gave us something to think about. For some unexplainable reason, many foremen are under the impression that railroad material is not of standard make and that the railroad, buying in large quantities, obtains it cheap. But the price tag tells the story. A lock washer is a small item but one is used on every track bolt and they cost from \$30 to \$50 per thousand. The pricing system keeps the foremen informed of this. It covers all items of material. The small articles on the shelves and the material under cover have a uniform price tag showing price and classification, and the large items stored in the open are stenciled or marked with a small brush. Because of fluctuations in prices, the same item of material may carry more than one price, but from an accounting feature that is as it should be.

We have been through the pricing system and have found it to be what it was claimed to be. All opposition to it spent its force in the first few months after it was adopted.

PATRICK FROST,
Foreman of Stores, Southern Pacific.

Price a Factor in Draft Gear Performance

OREGON, ILL.

TO THE EDITOR:

I have read with much interest the letter by C. R. L. pertaining to draft gear operation and effect, in the January 21 issue of the *Railway Age*, as well as the editorial in the November 5 issue therein mentioned, and the former comments which you have published from time to time. The consensus of opinion seems to be that, owing to the present inadequate capacities of draft gears, the railroads are suffering a yearly loss to freight and equipment estimated all the way from ten million to fifty million dollars.

The U.S.R.A. tests clearly demonstrated that the present day gears are capable of cushioning impacts of two 50-ton loaded cars at speed of from two to four miles an hour only. The report of the Freight Container Bureau of the Freight Claims Division, American Railway Association, shows by test on over 2,000 cars, over a period of some five years, with impact registers, that the average coupling speed was more than five to six miles an hour and that it took from two to four miles an hour to "make the coupling."

The railroads are face to face with the problem that they cannot limit the coupling speed to the present gear capacities, and with present methods of buying gears they cannot get gears with capacities that will protect at the higher coupling speeds because the gear with the capacity for coupling at five and six miles an hour must be sold to compete in price with the gears that cushion only the two to four miles an hour. It is not the size of the present pocket that limits the gear capacity, but the price the buyer is willing to pay.

If the railroads or the American Railroad Association would offer a suitable reward, so that the producers would be compensated in the end, either in business or royalties, no doubt draft gears would be tendered that would be adequate for the work desired. Under the present situation, however, there is no incentive for the gear makers to develop such a gear, for they know that it would cost more to make and they would have to sell it for the same prices as they are now being paid for gears of lower capacity.

The draft gear is a measure of insurance against car and lading damage, and the amount of kinetic energy it will absorb should be its measure of value. If the railroads would set the price to be paid in proportion to the energy absorption, they would very quickly get what they need and need badly, but just so long as they buy at the lowest price, regardless of capacity or absorption, just so long will they get what they purchase and not what they need, and they will continue paying out in damages many times what they save in first costs.

Heretofore it has not been so easy to measure the absorption of kinetic energy of draft gears, but with the development of shock dynamometers and impact registers, it is now an easy and simple matter.

When the railroads are ready to buy and pay for a reasonable profit on performance and not buy a lot of fancy advertisement, and salesmen's "hot air," it's a one hundred to one shot that the gear maker will tender what is adequate for the work to be done without any change in present standards.

E. A. LAUGHLIN.

Present Provisions for Coupler Flexibility

ROCHESTER, N. Y.

TO THE EDITOR:

Referring to John E. Muhlfeld's letter in the December 17 issue of the *Railway Age* discussing the subject of coupler flexibility, I do not quite follow his explanation of the necessity for the present standard $\frac{3}{4}$ -in. top clearance between the coupler shank and the striking casting. The vertical contact of a 9-in. type D knuckle and the face of the adjacent coupler under buff is symmetrical above and below the center line of draft, so that if the opposing couplers are held by their respective carriers truly horizontal and at the same height from the rail, they are no more likely to buckle upward than downward, regardless of top clearance. If one or both coupler heads are drooping, then under either pull or buff they will lift into approximately correct alinement, but this is not buckling and only demonstrates the necessity for proper carrier design and maintenance. The buckling of two couplers under buff is not a desirable performance to be encouraged by providing excess clearance.

If the present $\frac{3}{4}$ -in. top clearance is maintained in order that the coupler from a loaded car may angle upward to aline itself with the coupler of a light car riding at a higher center line of draft, then what provision is there for the downward angle which the latter coupler is just as anxious to assume? This inequality of permissible vertical movement above and below the center line of draft results in top and bottom edge contact between coupler knuckles. To insure as far as possible flat bearing between knuckles under pull, or knuckles and coupler faces under buff, either the top clearance should be reduced to the practicable minimum or the coupler carriers should be flexibly supported so that they will yield downward an equivalent amount.

Mr. Muhlfeld seems to intimate that the relation between the center of gravity of the center sills and the center line of draft has something to do with buckling of couplers or the compensation therefor. This might be so with flexible wooden

sills, but it is difficult to see how the location of the theoretical neutral axis can in any way influence coupler behavior.

In Mr. Muhlfeld's sixth paragraph he mentions the necessity of providing for the unavoidable twisting of the coupler shank with reference to the underframe. The slots through which the standard 1½-in. key passes are nominally 1¼-in. and this, provides not only for commercial assembly, but for an adequate amount of relative coupler twist. A hasty calculation shows that with the horizontal yoke attachments having outside cheek plates and a coupler with a butt approximately 9 in. wide, the coupler may twist in excess of 1 deg. 14 min. with reference to the sills, through the utilization of the available ⅜ in. vertical clearance in the cheek plate slots and in the coupler shank key slot, while the angularity caused by a tilted car body, with all side bearing clearance taken up on the low side and with three times as much truck spring deflection on that side as on the other, is appreciably less than the available angular movement of one shank only. Unless the adjacent car body rolls the maximum amount in the opposite direction, the total twisting clearance of two couplers and their attachments would be available, or more than twice the amount necessary to avoid any cramping from torsional movement.

DONALD S. BARROWS,
Vice-president, The Gould Coupler Company.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Serving a Great City, by L. A. Downs. "New Orleans and the Illinois Central System have a common history that extends farther back than the memory of any member of the audience." P. 4. 11 p. Pub. by Illinois Central System, Chicago, Ill. Apply.

State Regulation of Motor Vehicle Common Carrier Business 1928 Edition. Includes general discussion of subject and digest of State laws in force January 1, 1928, 39 p. Pub. by Motor Vehicle Conference Committee, New York City. Apply.

R.A.C.A. Commodity Classification 1928 Edition, Effective Jan. 1, 1928. Prepared by a subcommittee of the Railway Accounting Officers Association's Committee on Freight Accounts with the collaboration of representatives of the Bureau of Statistics and Bureau of Traffic, Interstate Commerce Commission. 216 p. Pub. by Railway Accounting Officers Association, Washington, D. C. \$1.

The Mississippi Valley Flood—1927, prepared by a special committee of the American Railway Engineering Association. Another edition, revised to Jan. 1, 1928, of the remarkable report that received extended mention in the *Railway Age* of Sept. 17, 1927. Issued as Bulletin No. 303 (Part 2) January, 1928. President Coolidge's fleet control message of December 8, 1927 included. 111, 35 p. maps, illus. Pub. by American Railway Engineering Association, Chicago, Ill. \$1.

Periodical Articles

Do Railroads Want a Quarrel with the Public? A Selfish Attitude on Rates by Some Will Mar a Fine Record, by Homer Hoch. Country Gentleman, February, 1928, p. 8, 115.

By Sledge to the Middle Ages, by Eleanor Lattimore. Part II. Suggested for those who want a comfortable way of finding out what life is like to have great expanses of territory and no railroads. Atlantic Monthly, February, 1928, p. 180-189.

Military Transport Vehicles—Recent Development and their Commercial Significance, by Capt. C. H. Kuhne. An illustrated article on types of motor vehicles developed to transport troops and supplies whether there is a recognizable road or not and their possible adaptations to commercial freight transport. Journal of Institute of Transport, January, 1928, p. 160-170.

Le Transsaharien dans l'Afrique au XXe Siecle, by Henri Porin. A history of the projects for Trans-Saharan railways, effects of new systems of transport on desert travel, the military, economic and political value of the railway, and the railway and modern civilization in Africa. Revue Economique Internationale, December, 1927, p. 407-433.

Looking Backward

Fifty Years Ago

During the year 1877 the Boston & Albany charged an average of 1.21 cents per ton per mile for transporting freight. This represents a decline of 66 per cent in freight charge per ton per mile since 1865 when the average rate was 3.55 cents.—*Railway Age*, February 7, 1878.

A number of taxpayers of the City of Cincinnati, Ohio, which has already invested more than \$16,000,000 in the Cincinnati Southern [now the Cincinnati, New Orleans and Texas Pacific], have organized to protest against the further levying of a tax to raise \$3,275,522 with which to complete the railroad to Chattanooga, Tenn.—*Railway Age*, February 7, 1878.

The last rail on the Rochester & State Line [now the Buffalo, Rochester & Pittsburgh] was laid near Salamanca, N. Y., on January 29, completing the line of 108 miles between Rochester, N. Y., and Salamanca. This railroad now provides a connection between the Atlantic & Great Western [now part of the Erie] and the New York Central & Hudson River [now the New York Central].—*Railroad Gazette*, February 1, 1878.

Chauncey M. Depew, general counsel of the New York Central & Hudson River, addressed a special meeting of the New York Chamber of Commerce on January 30, answering a number of speakers who deplored the unsatisfactory relations existing between merchants and the railroads and others who complained of the deficient railroad terminal facilities at New York City.—*Railroad Gazette*, February 1, 1878.

Twenty-Five Years Ago

Interstate Commerce Commission statistics for the year ended June 30, 1901, show that the average state tax per mile on railways was \$261. The highest tax existed in Massachusetts, where it amounted to \$1,366 per mile. In practically every state the figures show an increase over those of the previous year.—*Railway Age*, February 6, 1903.

For the purpose of relieving the freight congestion on its lines the Pennsylvania has withdrawn its 20-hour special train between New York and Chicago. At the same time the congestion on the Lehigh Valley has been cleared and that railroad has restored its Black Diamond Express.—*Railroad Gazette*, February 6, 1903.

Previous records for runs of more than a mile were broken by the Empire State Express of the New York Central & Hudson River on January 29 when it covered 7.29 miles between Palmyra, N. Y., and Macedon in 4 minutes, or an average of 109.35 m.p.h.—*Railway and Engineering Review*, February 7, 1903.

Ten Years Ago

To provide for rail movement of food and supplies consigned to the French, British and Italian governments arrangements have been made for the concentration of these shipments and their movement to the Atlantic seaboard in solid trainloads from Chicago, East St. Louis, Buffalo and Pittsburgh.—*Railway Review*, February 2, 1918.

An order looking toward economy of expenditure of railroad operating revenues during the war was issued by Director General McAdoo on January 28. He directed that operating revenues shall not be expended for the payment of agents who are employed to influence legislation, for the payment of expenses of associations of carriers unless approved in advance or for any political purpose.—*Railway Age*, February 1, 1918.

Odds and Ends of Railroading

The United States government, not to be outdone by individuals, has had prepared by the Bureau of Railway Economics a bibliography of the Baltimore & Ohio Railroad.—
From a news note in The Bookman.

We feel sure that it will be news to Dr. Parmelee and his associates, and to railroad men generally, to hear that the Bureau has been taken over by Uncle Sam.

Fortunately, says the Dallas Morning News, the locomotive engineer has no one in his cab but the fireman; therefore he doesn't try to drive with one hand.

The drummer en route
Repairs to the smoker—
Just simply to smoke?
Well hardly, the joker!

Do You Know Others as Odd?

One of the oddest nicknames for a railway is prevalent in Texas, where the San Antonio, Uvalde & Gulf (now part of the Missouri Pacific) has been known from its inception as the "Sausage," due probably to its initials, S. A. U. & G.

Our Literary Quest

"Referring to your item about the influence of Charles Dickens in the naming of railroad stations in your issue of January 21," writes H. M. Waybright, "There is also a Trotwood, Ohio, on the the P.R.R. taken from David Copperfield by an admirer of Dickens seventy years ago."

Silver Lining Department

Rates on the transportation of hippopotamuses, rhinoceroses, zebras, alligators, monkeys, snakes and others of their zoological kin are too low, and may be revised upward, the Interstate Commerce Commission has ruled. Well, thank goodness, there are some kinds of animals not produced in the Hoch-Smith constituency.

Know Anything About This Clock?

The office of the general superintendent of the Baltimore & Ohio at Pittsburgh contains a clock of mystery. It is a huge affair and the cabinet is encased in solid walnut. Watchmakers who have examined it state that it dates from the Revolutionary War period and is at least 150 years old. Despite its advanced age, however, the clock keeps remarkably good time. It has been in the general superintendent's office since 1901, when the B. & O. took over the Pittsburgh & Western, but its history prior to that time is unknown.

Famous Frisco Fuller Family

The entry of the St. Louis-San Francisco in the railway family lists, not only shows a long service record but is also alliterative. F. A. Fuller and his six sons were all Frisco employees. The father and one of the sons are dead, but the remaining five brothers are still in Frisco service. The father began work with the Frisco in 1884 and remained in continued service for 43 years until his death last year. Ed, Ivan and Harry are machinists, Herman is a switchman, LeRoy is traveling passenger agent, and Bert, the deceased brother, was a brakeman.

57 Years Without a Mishap

Benjamin Locke, who at the age of 70, has just retired from his position as locomotive engineman on the Delaware, Lackawanna & Western, after 57 years of continuous service with that company, is certified by the railroad company as having served all these years without a single unfavorable mark on his record, without any personal injury and without ever having

had a wreck. The statement does not say how long he has been running a locomotive, but he began as a wood passer, and apparently has been in the locomotive service throughout his career. He ran between Hoboken, N. J., and Easton, Pa.

From Observation to Action

H. L. Stewart, of the Southern Pacific is probably the only man in the country who started out as a newspaper reporter and finished on the right hand side of a locomotive cab. Stewart, who is now running a passenger train on the Houston division, was a reporter and sports writer on St. Louis newspapers for a time, later working on San Antonio newspapers. He has been in S. P. service for 30 years.

A Railroad Man Without a Country

A. L. Becker, architect for the Gulf Coast Lines, is probably the only railway officer who was, for a short time, a man without a country. He was born in Trieste, on the Adriatic Sea, which was then part of Austria. Shortly before the world war he came to this country and has remained here since. In the meantime, however, Italy had taken over Trieste. When Becker applied for his United States citizenship papers, shortly after the war, considerable difficulty developed. He was not an Austrian, since his birthplace was not now in Austrian territory, and certainly he was not an Italian, since, while his home was in Italian territory, he had never lived under an Italian regime. What was he? The government authorities settled the question for him by making him an American citizen.

First Automobile to Reach

Key West Under Own Power

Claude Nolan, driving a LaSalle car on December 23 and 24, traversed the track of the Florida East Coast from the mainland to Key West, traveling some of the time as fast as 40 miles an hour. He had with him a companion who alternated with him at the steering wheel every 15 minutes. The spaces between the ties measured from 3½ inches to 6 inches, and the accounts say that even at high speed the shocks to the tires were quite severe. And on one of the bridges (seven miles long) three tires were blown out. The rubber was badly cut by the spikes. After one rear wheel had run off the end of a tie, speed was somewhat diminished, but jolting was correspondingly increased. The car endured the trip remarkably well, no replacements being required except tires and one shock-absorber strap. Reporters and photographers observed the exhibition from small islands and from boats.

"Off Agin, On Agin, Gone Agin"

Nearly everyone has heard some mention made of the famous Finnigan, but not everyone knows how it all began. Many years ago, in "Life," S. W. Gilliland wrote the railway poem which was destined to make Finnigan famous. There are many verses to the poem, dealing with the troubles that Section Foreman Finnigan had with Superintendent Flannigan. The latter insisted that Finnigan make his reports short and snappy, and Finnigan in reporting a derailment, finally complied, as related in the last verse:

He wuz shantyin' thin, wuz Finnigin,
As miny a railroader's been agin,
An' the shmoky ol' lamp wuz burnin' bright
In Finnigan's shanty all that night—
Bilin' down his repoort, wuz Finnigin!
An' he writed like this: "Musther Flannigan:
Off agin. On agin.
Gone agin.—Finnigin."



On the New York Central at West Point

THE AMERICAN SOCIETY FOR STEEL TREATING will hold its first semi-annual meeting on February 16 and 17 at the Mount Royal Hotel, Montreal, Que.

THE BALTIMORE & OHIO RAILROAD ACCOUNTING ASSOCIATION, INC., (headquarters Baltimore, Md.) on January 20, installed for the ensuing year the following officers: John C. McCahan, president; William R. Heartt, vice president; Ethelbert Hall, secretary, and R. H. English, treasurer.

SENATOR COPELAND, OF NEW YORK, has introduced in the Senate a resolution, S. Res. 127, directing the Interstate Commerce Commission to report to the Senate its opinion in respect to the feasibility of requiring each railroad subject to the interstate commerce act to establish a pension fund for its employees, and to include in the report, if in the opinion of the commission such project is feasible, a statement of the plan, for establishing such a fund, which the commission deems most suitable.

REPRESENTATIVE YON, OF FLORIDA, has introduced in the House a resolution expressing the sense of the House that the Pullman surcharge should be "immediately abated and discontinued until such time as reduction of freight on agricultural products shall require same to be reinstated." A preamble apparently attempts to say that the commission has kept the surcharge in effect "because other adjustments of freight rates demand more prompt attention" but that the commission has subsequently refused to reduce freight rates on agricultural products.

Government Wants Southern Ry. Building

President Coolidge, on January 30, through the budget bureau, asked Congress for an immediate appropriation of \$2,680,000 for the purchase of the general office building of the Southern Railway and the land on which it is located at Thirteenth street and Pennsylvania avenue, in Washington. This is part of the triangle from Pennsylvania avenue south to the Mall, the purchase of which Congress recently authorized. The government proposes to use the Southern build-

ing pending the completion of work on certain new public buildings. No announcement has yet been made by the railway company of its intentions as to the location of a new office.

Denver Decision on Firemen's Wages Sustained

The decision of four arbitrators at Denver, December 17, granting increased wages to fireman and hostlers on western railways was upheld by the United States District Court at Chicago on February 1, Judge George A. Carpenter sustaining the motion of the firemen's brotherhood to dismiss the petition of the railways asking the court to impeach the award. The increase will be binding on the railways unless appealed to a higher court before February 10.

Railroads Planning to Do Express Business Themselves

The Association of Railway Executives is laying plans to have the express business of the country carried on wholly by the railroads and the action thus far taken indicates that within a year from the present time the American Railway Express Company will be bought out, or in case this is not done, a new company will be formed. A committee is now circularizing the roads to determine what percentage are in favor of the project, but extensive informal assent seems to be already assured. Many or most of the contracts of railroads with the express company terminating in February, 1929, contain an option looking to the purchase of the express company's property. Stocks of the Adams Express Company and of the American Railway Express have advanced in the market recently, the former from 195 to 295 and the latter from 110 to 135.

Testimonial Dinner to T. P. Artaud

Members of the Interstate Commerce Commission attended a dinner on January 26 in honor of T. P. Artaud, who has resigned as supervisor of land appraisals and executive assistant of the commission's bureau of valuation, to become director of research for the National As-

sociation of Owners of Railroad and Public Utility Securities, with office at Washington. The dinner was given by his associates in the land appraisal section and Chairman Campbell presided as toastmaster. Mr. Artaud had been associated with the bureau since the beginning of the valuation work in January, 1914, and served on the advisory committee having to do with the promulgation of rules and procedures. In 1921 he was appointed executive assistant in addition to his duties as supervisor of land appraisals. Before going to the commission Mr. Artaud was assistant general manager of the Hudson & Manhattan.

Brookhart Proposes Government Own Coal and Railroads

Senator Brookhart, of Iowa, has introduced in Congress a bill, S. 2826, "to prevent monopoly in the production, transportation and sale of anthracite coal", by providing for the acquisition by the government by lease, purchase or condemnation, of lands containing coal, leasing lands for mining, and the construction or acquisition of railroad facilities for the transportation and delivery of the coal, "in order to prevent discrimination in transportation service or rates against such lessees." The bill would authorize the appointment of a Federal Coal Commission to exercise the powers proposed in the bill, including the administration of the railroads that may be acquired, charging "a rate," which in its judgment shall be sufficient to pay an annual return of 4 per cent upon the cost of acquisition or construction, plus the cost of operation, depreciation, and a sinking fund payment to pay for the cost in 25 years. However, no freight rate is to be charged which is higher than those charged by other railroads. The bill would appropriate \$50,000,000 for the purpose.

Southern Pacific Officers Held in Contempt

Federal Judge J. C. Hutcheson of Texas in a decision handed down on January 28, held four officers of the Southern Pacific lines in Texas and Louisiana in contempt of court for violation of an injunction issued August 3, 1927, forbidding them to interfere with employees' union activities. A request for this in-

junction was made of the court by the Brotherhood of Railway Clerks, following the failure of an arbitration board to reach an agreement on an increased wage scale. The brotherhood objected to the efforts of the railway to form an organization of clerks confined to its own lines. Earlier testimony before the court brought out the fact that a majority of the clerks were members of the company association and railroad attorneys declared that the railroad had recognized that organization under the provisions of the Railway Labor Law. The Southern Pacific officers cited were: H. M. Lull, executive vice-president; G. S. Waid, vice-president and general manager of the Texas lines; J. G. Torian, assistant to the vice-president and general manager, and W. R. Mann, assistant superintendent of the El Paso division.

To Study Changes in Economic Currents

Secretary Hoover, of the Department of Commerce, has announced the appointment of a committee of leading business men and economists, whose names will be announced later, to supervise a far-reaching inquiry into the changes in economic currents in the country. Private individuals have subscribed the necessary money to enable the committee to pay the expenses of the Bureau of Economic Research, of New York, to make the fact-finding background, and the co-operation of the Department of Commerce will be given. It is proposed, according to the announcement, "to determine facts with regard to such questions as the shifts in employment, changes in methods of production in industry and agriculture, and in distribution, shifts in relative price levels and profits, movements in the business cycle, shifts in standards of living, foreign trade and foreign credits, and other allied subjects which bear upon an understanding of the general business situation of the country. It is expected that the inquiry will take some months and it will be made of the most exhaustive order."

Lehigh Valley to Test the Term "Reasonable"

The Transportation Act (1920) in the clause directing the Interstate Commerce Commission to make railroad rates which will or should produce a fair return, stipulates (Section 15-a, Paragraph 2) that the railroad management must be honest, efficient, etc., "and make reasonable expenditures for * * * structures and equipment;" but when the reasonableness of an expenditure is disputed, as for example, by the authorities of a state, the statute leaves a question.

The Lehigh Valley, having agreed with the New Jersey State Highway Commission on the abolition of a grade crossing, was about to begin the work when the Board of Public Utility Commissioners of the State, over-ruling the highway commission, called upon the road to adopt another plan, costing nearly twice as much. At this the road demurred and entered a suit against the Public Utility Commissioners. This suit, decided against

the road in the lower court, is now before the United States Supreme Court. The argument of the road is that, as Congress has undertaken to provide a fair return to the carriers, based on reasonable expenditures for structures, a state regulatory body may not rightfully call for expenditures in excess of what may be deemed reasonable by the federal authority; such action would defeat the purpose of Congress to balance revenue and expenditures.

Radio on Chesapeake & Ohio Freights

Extensive experiments have been made on the James River Division of the Chesapeake & Ohio with radio apparatus for communicating between the locomotive and caboose on long freight trains, the apparatus having been installed a few weeks ago by the Westinghouse Electric & Manufacturing Company. Loud speakers are used with success, though there is some fading when passing over or near steel truss bridges, and in tunnels. The route over which the tests are being made, has many curves, several bridges, and three tunnels. The engine and caboose are seldom within sight of each other and frequently it is impossible on long trains to give and receive hand or lantern signals. The tests show considerable fading in tunnels, the volume reaching a minimum when the train is about two-thirds through, then gradually ascending to normal as the portal is reached. Fading also is perceptible along the sides of high cliffs and in deep cuts or when passing between high buildings connected by steel bridges spanning the tracks. Conversation, however, is maintained by the use of headphones. All kinds of weather, except lightning have been encountered without disturbing communication.

Railroad Division A.S.M.E., to hold two meetings in March

The Railroad Division of the American Society of Mechanical Engineers is scheduled to hold two meetings during March with the Metropolitan Section of

the Society. The program for the March 1 meeting promises to be of unique and exceptional interest to all the engineering professions. The proper title for this meeting should be Explorers' Night. Earl Hanson, a graduate in mechanical engineering, University of Wisconsin, Class of 1922, who has made two trips to Iceland, will present a paper on engineering and progress in modern Iceland. Vilhjalmur Stefansson, the noted Arctic explorer, has also promised to be present at the meeting, either to discuss Mr. Hanson's paper or give additional information on this ancient country which has now developed into the modern age of engineering and machinery. A number of other well-known explorers have been invited to attend the meeting.

The second meeting is also a joint meeting with the Metropolitan Section and the various student branches in the Metropolitan area. At this meeting an award will be presented to the student who has written the best technical paper during the past year, and the final report of the Railroad Division, Sub-Committee on Professional Service, on the mechanical engineer in the railroad and railway supply industries will be presented and discussed. A number of well-known mechanical engineers in both industries have been invited to discuss this report. An invitation has also been extended to special apprentices and mechanical department officers to attend this meeting and discuss the report. Both meetings are to be held in the Engineering Society's Building, 29 West 39th street, New York.

Reading Gets Motor Coach Charter

The governor of the Commonwealth of Pennsylvania has approved of the Reading Transportation Company for a corporate charter authorizing it to operate motor vehicles in that state. The incorporators are officers of the Reading Railway and it is their intention, if authority can be secured, to transfer their interest in the newly formed company to the railway.

This action by the governor terminates



Checkerboard Wall at Marcus Hook, Pa.—Looking West

Concrete wall six feet high, 18 inches thick and about 50 ft. long, where a grade crossing over the main tracks of the Philadelphia-Washington line of the Pennsylvania, has been abolished. There are two walls, one on each side of the railroad.

a case which has been before the public authorities and the courts of Pennsylvania for almost two years. The application for charter was approved by the Public Service Commission almost two years ago and passed on to Gifford Pinchot, then governor of the Commonwealth, for final approval, which he refused to give. His term expiring at the end of 1926, the Reading renewed its application, which was again approved by the Public Service Commission. Trolley lines in the territory then sought a restraining order from the courts to prohibit the granting of the charter. A few days ago the Supreme Court of the Commonwealth ruled against the protestants and this action was followed almost immediately by an act of approval on the part of the governor.

The company, however, must still secure authority from the Public Service Commission for each motor coach route which it wishes to establish. Several such applications are now pending before the commission.

The employees of one of the electric lines which is consistently opposing the Reading's attempt to embark on motor coach operation have been on strike since last October. This company had authority to operate motor coaches paralleling its trolley lines for "emergency service" only. Under this authority it has been operating continuously on the highways since the beginning of the strike. The Reading has asked the Public Service Commission for a "cease and desist" order against the electric line, alleging that the term "emergency" does not contemplate extended operation over a period of months. A hearing on this application will be given in Harrisburg on February 9.

Begin Lake Cargo Rate Case Argument

A two-day oral argument before the Interstate Commerce Commission was begun on February 1 in the lake cargo coal rate case, in which the commission has suspended a 20-cent reduction proposed by the roads serving the southern coal fields on bituminous coal to the lake ports, to meet a corresponding reduction ordered by the commission last year from the Pennsylvania and Ohio fields. The reduction was supported by counsel for the Chesapeake & Ohio, Louisville & Nashville and Norfolk & Western, coal operators from the southern district and representatives of the consumers in the Northwest, while it was opposed by representatives of the coal operators of Ohio and Pennsylvania and to some extent by the northern roads, although the latter said that the commission ought to solve the problem by restoring the rate situation as it was before it ordered the reduction in their rates last summer. Counsel for the southern roads said that the proposed rates are greater than minimum reasonable rates and would throw no burden on other traffic, but that it would not be fair to use them as standards by which to measure other rates.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

- AIR BRAKE ASSOCIATION.**—T. L. Burton, 165 Broadway, New York City. Annual convention, May 1-4, 1928, Detroit, Mich. Exhibit by Air Brake Appliance Association.
- AIR BRAKE APPLIANCE ASSOCIATION.**—Charles R. Busch, Buffalo Brake Beam Co., 32 Nassau St., New York. Meets with Air Brake Association.
- AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.**—J. D. Gowin, 112 W. Adams St., Chicago.
- AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.**—E. L. Dugan, 332 S. Michigan Ave., Chicago. Next meeting, April 1928, Biloxi, Miss.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.**—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.**—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Annual convention, June 12-15, 1928, Memphis, Tenn.
- AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.**—L. M. Jones, supt. of sleeping Annual meeting, October, 1928, Havana, Cuba.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.**—J. W. Welsh, 292 Madison Ave., New York. Annual convention, Sept. 22-28, Cleveland Public Auditorium, Cleveland, Ohio.
- AMERICAN RAILROAD MASTER TINNERS' COPPER-SMITHS' AND PIPE FITTERS' ASSOCIATION.**—C. Borchardt, 202 North Hamlin Ave., Chicago.
- AMERICAN RAILWAY ASSOCIATION.**—H. J. Forster 30 Vesey St., New York, N. Y.
Division I.—Operating—J. C. Caviston, 39 Vesey St., New York.
Freight Station Section (including former activities of American Association of Freight Agents)—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.
Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.
Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association)—J. C. Caviston, 30 Vesey St., New York.
Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, May 16 and 17, 1928, Buffalo, N. Y.
Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents)—W. A. Fairbanks, 30 Vesey St., New York. Next meeting, Sept. 18-20, 1928, San Francisco.
Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago.
Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.
Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual meeting, March 6-8, 1928, Palmer House, Chicago. Exhibit by National Railway Appliances Association.
Construction and Maintenance Section.—E. H. Fritch.
Electrical Section.—E. H. Fritch.
Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York. Annual meeting, March 5 and 6, 1928, Stevens Hotel, Chicago.
Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 20-27, 1928, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.
Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.
Division VI.—Purchase and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting, June 20-22, Atlantic City, N. J.
Division VII.—Freight Claims (including former activities of the Freight Claims Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 5-8, 1928, Detroit, Mich.
Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.
Motor Transport Division.—George M. Campbell, American Railway Association, 30 Vesey St., N. Y. C. Next meeting, Atlantic City, N. J., June.

- AMERICAN RAILROAD BRIDGE AND BUILDING ASSOCIATION.**—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, Oct. 23-25, 1928, Statler Hotel, Boston. Exhibit by Bridge and Building Supply Men's Association.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.**—R. R. Walker, agricultural agent, M-K-T Railroad, Dallas, Tex. Annual convention, May, 1928, Miami, Fla.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.**—(Works in co-operation with the American Railway Association, Division IV). E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 6-8, 1928, Palmer House, Chicago. Exhibit by National Railway Appliances Association.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention, August 29-31, 1928, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—Secretary: E. H. Lunde, Federal Machinery Sales Co., Chicago.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.**—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—E. J. Stocking, 111 West Washington St., Chicago.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Next meeting, June, 1928, Omaha, Neb.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Next convention, Oct. 23-26, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXECUTIVES.**—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.
- ASSOCIATION OF RAILWAY SUPPLY MEN.**—C. F. Weil, American Brake Shoe & Fdy. Co., 332 So. Michigan Ave., Chicago. Meets with International Railway General Foremen's Association.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.**—W. D. Waugh, Detroit Graphite Co., St. Louis, Mo. Annual exhibit at convention of American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.**—C. R. Crook, 129 Chaffon St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Arton Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.**—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.**—A. J. Walsh, 5874 Plymouth, Apt. 18, St. Louis, Mo. Meetings, first Tuesday of each month, except July and August, Broadview Hotel, East St. Louis, Ill.
- CENTRAL RAILWAY CLUB.**—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.**—(See Railway Car Department Officers' Association.)
- CINCINNATI RAILWAY CLUB.**—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.
- CLEVELAND RAILWAY CLUB.**—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.**—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual convention, August 21-23, 1928, Hotel Sherman, Chicago. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.**—W. W. Criley, Ajax Mfg. Co., Cleveland, O.
- INTERNATIONAL RAILROAD FUEL ASSOCIATION.**—L. G. Plant, 80 E. Jackson Blvd., Chicago. Annual convention, May 7-11, 1928, Chicago. Exhibit by International Railway Supply Men's Association.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Annual convention, September 4-7, 1928, Chicago.
- INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.**—W. J. Dickinson, 189 W. Madi-

son St., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Annual meeting, May 22-25, 1928, Cleveland, Ohio.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. A. Morse, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo. Next annual convention, April 24-26, 1928, Arlington Hotel, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual convention, September, 1928, Glacier National Park, Mont.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention, March 5-8, 1928, Coliseum, Chicago.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: C. F. Larson, supt. of safety, Missouri Pacific, St. Louis, Mo.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 116 Woodward Building, Washington, D. C. Next convention, May 1-4, 1928, Atlanta, Ga.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Supply Men's Association.—B. S. Johnson, W. H. Miner, Inc., 209 S. LaSalle St., Chicago.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next convention, Oct. 9-11, 1928.

RAILWAY REAL ESTATE ASSOCIATION.—C. C. Marlor, 208 W. Washington St., Chicago, Illinois.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual convention, September, 1928, Detroit, Mich. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

TRACK SUPPLY ASSOCIATION.—A. H. Todd, Positive Rail Anchor Co., 80 E. Jackson Blvd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Annual convention, October, 1928, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

Seek Reconsideration of Southwestern Cases

The western trunk line railroads have petitioned the Interstate Commerce Commission for a reconsideration and modification of its report and orders in the Consolidated Southwestern cases, which, they say, "while apparently establishing certain limited advances in rates, threaten such sweeping reductions as to impair seriously the already inadequate revenues of these petitioners." The petition points out that the commission has itself found the rate level in western trunk line territory to be the lowest in the West. The commission is asked to authorize such advances in rates as may be necessary to remove the undue preferences and prejudices found to exist, to vacate all requirements that rates to, from, or within Kansas or other parts of western trunk line territory shall be reduced, to vacate the requirement of joint overhead rates to or from Kansas and other parts of western trunk line territory and the East and South, and to grant such other relief as they may be found entitled to.

Two Short Lines to Abandon Passenger Service

The Board of Public Utility Commissioners of New Jersey has authorized the Morristown & Erie to discontinue passenger service between Morristown and Essex Fells, 10.5 miles, effective April 29. This line connects a branch of the Erie at Essex Fells with the main line of the Lackawanna at Morristown. Its territory is well covered with improved highways, over which motor coach lines operate. In 1920 it handled 147,950 passengers bringing in a gross passenger revenue of \$18,021. In 1926 the number of passengers handled had declined to 47,164 and the gross revenue to \$4,531, decreases of 68 per cent and 75 per cent respectively.

Another short line railroad in New York State, the Genesee & Wyoming, 10 miles, operating in an easterly direction from Retsof, has petitioned the Public Service Commission of that state for permission to discontinue passenger service. In 1927 its passenger revenues were only \$557.

Foreign Railways

Disastrous Accident in Burma

Fifty-two persons killed is the record of the wreck of a railroad train in Burma, according to press dispatches of January 29. A dispatch from Rangoon of that date says that a Mandalay-Rangoon train plunged through a bridge, 109 miles from that city.

Safety on British Railways

The number of passengers killed in train accidents in Great Britain in 1927, was 26, the largest total since 1906. These 26, however, were killed in three accidents—two collisions and one derailment. As bearing on the risk of being killed in a train accident, the Railway Gazette, (London), makes comparisons of the years, not by the number of persons but by the total number of collisions and derailments which proved fatal to passengers; and it finds only 84 of these in the present century, or only a fraction over three each year, on the average. The number of passengers killed in train accidents in 1927, was double the number (13) reported for 1926. For the ten years prior to 1926, the total number of passengers killed in train accidents on British railways was 78, or an average of less than 8 yearly.

Reserved Seats on German Trains

During the heavy passenger traffic on the German Railroads in the summer season reserved seats are purchasable, applicable both to sleeping-car and coach accommodations, according to Assistant

Trade Commissioner A. Douglas Cook, Berlin. Such place cards are issued usually from the station at which the train is made up. They may also be ordered by letter or wire by parties planning to board the train at intermediate stations. However, such place cards are not absolutely necessary, as passengers without them are seated in the same compartment with passengers holding place cards, but the seat must be relinquished in favor of any passenger holding a card for the particular seat. As a general rule all seats, except two in each compartment, may be reserved in advance; the remaining two seats are for such travelers as have not purchased place cards. Outside the door of each compartment are numbers indicating the free and reserved seats.

During the principal traveling season between May and September, 1927, 62,000 place cards daily were issued on an average, and of this number 60 per cent were sold for express trains running to and from Berlin. During the same period, cards for sleeping cars were sold on an average of 4,800 per night, of which between 30 and 40 per cent were for trains to and from Berlin. The prices for such place cards for both day trains and sleeping cars are, as follows: First class, 2 marks; second class, 1 mark; third class, 50 pfennigs.

THE NEW YORK CENTRAL has ordered 100 tons of steel from the Bethlehem Steel Company for bridges on its line in West Virginia.

Equipment and Supplies

Locomotives

THE SEABOARD AIR LINE is inquiring for 25 Mikado type locomotives.

THE MUD VALLEY LOGGING COMPANY, Olympia, Wash., has ordered 1 2-6-6-2 type Mallet locomotive from the Baldwin Locomotive Works.

THE MEXICAN RAILWAY has ordered 2 three-cylinder Pacific type locomotives from the American Locomotive Company. These locomotives will have 20 in. by 28 in. cylinders and a total weight in working order of 252,000 lb.

Freight Cars

THE AMERICAN SMELTING & REFINING COMPANY is inquiring for 60 gondola cars.

THE BANGOR & AROOSTOOK will build 100 single sheathed box cars in its shops at Derby, Me.

THE H. C. FRICK COKE COMPANY has placed orders for the repair of 274 freight cars with the Greenville Steel Car Company, and 93 with its own shops.

THE CARNEGIE STEEL COMPANY has ordered 15 tank cars from the Petroleum Iron Works and 35 from the Standard Tank Car Company.

THE CENTRAL OF GEORGIA has ordered 500 gondola cars from the Tennessee Coal Iron & Railroad Company. Inquiry for this equipment was reported in the *Railway Age* of January 7.

THE WOODWARD IRON COMPANY has ordered 50 mine cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 3.

THE CHESAPEAKE & OHIO has ordered 300 seventy-ton hopper car bodies from the Richmond Car Works and 200 from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of January 14.

Passenger Cars

THE LONG ISLAND has ordered 10 coaches from the American Car & Foundry Company.

THE ST. LOUIS-SAN FRANCISCO has ordered 15 combination steel baggage and mail cars and 5 steel baggage cars, all 70 ft. in length, from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 25.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 2 steel combination passenger and baggage cars and 2 steel

baggage cars, all to be 70 ft. long, from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 30.

Machinery and Tools

THE CANADIAN PACIFIC has ordered two 100-ton wrecking cranes from the Industrial Brownhoist Corporation.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for one punching machine and one double wheel grinder.

THE CENTRAL OF NEW JERSEY has ordered an Acme 2-in. double bolt cutter from the Niles-Bement-Pond Company.

Iron and Steel

THE LEHIGH VALLEY is inquiring for 400 tons of steel for bridges on its line in New York.

THE CLEVELAND UNION TERMINAL has ordered 57,800 tons of structural steel from the American Bridge Company.

THE CENTRAL OF NEW JERSEY has ordered 10,830 tons of 130-lb. rail and 2,664 tons of 100-lb. rail, from the Bethlehem Steel Company.

THE PENNSYLVANIA is inquiring for 125 tons of steel for a bridge in Philadelphia. An order for 200 tons of steel has been given to the McClintic-Marshall Company.

THE PENNSYLVANIA is inquiring for 500 tons of steel for an office building in Philadelphia. It ordered 400 tons from the McClintic-Marshall Company for a passenger station at Lancaster, Pa.

THE CHESAPEAKE & OHIO has ordered 600 tons of steel from the Fort Pitt Bridge Works for use in construction work being done on its Covington, Ky., bridge.

THE SOUTHERN has ordered 20,555 tons of rail, enough to lay 120 miles of track, for delivery in the first six months of 1928. The new rail will include 8,520 tons of 130-lb. section, 9,270 tons of 100-lb. section, and 2,765 tons of 85-lb. section. Orders for 6,480 tons of 130-lb. rail, all of the 100-lb. rail, and 765 tons of 85-lb. rail were given to the Tennessee Coal, Iron & Railroad Company, and orders for 2,040 tons of 130-lb. rail were given to the Bethlehem Steel Company, and 2,000 tons of 85-lb. rail to the Illinois Steel Company.

Signaling

THE READING COMPANY has contracted with the Union Switch & Signal Company to install additional electro-pneumatic interlocking facilities at Birdsboro, Pa.

THE DELAWARE, LACKAWANNA & WESTERN has ordered from the Union Switch & Signal Company an electro-pneumatic interlocking for Boonton, N. J.; 27-lever machine, color light signals, etc.

Supply Trade

Philip E. Bliss, vice-president of the Warner & Swasey Co., Cleveland, Ohio, has been elected president to succeed Frank A. Scott, who has been made chairman of the board.

James R. White, vice-president of Rickard & Co., industrial advertising agents, resigned, effective January 1, to become secretary of Jenkins Brothers, valve manufacturers, New York.

Directors of the Inland Steel Company and the Youngstown Sheet & Tube Company approved the merger of these companies at separate meetings on January 31. The stockholders of both companies will meet on March 15 to act upon the plan.

B. F. Fairless, vice-president and general manager of the Central Alloy Steel Corporation, Massillon, Ohio, has been elected president and general manager to succeed Charles E. Stuart, resigned. He will be succeeded by S. S. French, president of the Berger Manufacturing division of the Central Alloy Steel Corporation, who will also retain that position.



B. F. Fairless

sition. Mr. Fairless was born on May 3, 1890 at Pigeon Run, Ohio and was educated at Ohio Northern University, Ada, Ohio and Wooster University, Wooster, Ohio. He entered railway service on the Wheeling & Lake Erie as a transitman at Brewster, Ohio, in 1912 and on May 3, 1914 became associated with the Central Alloy Steel Corporation.

F. O. Schramm, assistant secretary of the Pressed Steel Car Company, at New York, has been appointed also assistant general sales manager for the eastern territory, and E. L. Johnson, sales engineer, has been appointed assistant general sales manager for the western territory, with headquarters at Chicago.

The O'Malley-Bear Valve Corporation, Chicago has changed its name to the Central Valve Manufacturing Com-

PANY. It is continuing the manufacture and sale of the valves and parts formerly fabricated by the old corporation. The manufacture of brass engine castings and journal bearings has been discontinued while a new line of valves, designed especially for railroad service, is being placed on the market.

At a recent meeting of the board of directors of the **International Oxygen Company**, Newark, N. J., **A. A. Heller**, treasurer and general manager was elected president; **Sol Heller**, who was president, was elected a vice-president; **Samuel Heller**, a director, was elected a vice-president and **John Heller**, secretary was elected secretary and treasurer. The company has bought property at Buffalo, N. Y. and is proceeding with the erection of a gas plant to serve that territory.

C. W. Gennet, Jr. manager of the rail department of the **Robert W. Hunt Company**, Chicago, has resigned to become vice president of the newly organized **Sperry Rail Service Company**, Brooklyn, N. Y. Mr Gennet will establish headquarters at Chicago and will assume direct charge of the service to be offered by this company to the railroads in locating transverse fissures in rails and track. He was born in Binghamton, N. Y., August 1, 1876 and graduated in mechanical engineering from Cornell University in 1898. Immediately after leaving school he entered the employ of the Baldwin Locomotive



C. W. Gennet, Jr.

otive Works and a year later entered the testing department of the Southern at Alexandria, Va., where he remained until 1907. He then entered the service of the Robert W. Hunt Company as manager of the St. Louis office. He was promoted to manager of the rail department with headquarters in Chicago in 1909, since which time he has been in charge of this company's service for the inspection of rails and fastenings at mills throughout the United States and Canada.

H. H. Morgan, manager of the Pittsburgh office of the **Robert W. Hunt Company**, has been appointed manager of the rail department of that company, with headquarters at Chicago to succeed

C. W. Gennet, Jr., resigned to accept service with another company. Mr. Morgan entered the employ of the Robert W. Hunt Company in 1904, since



H. H. Morgan

which time he has been connected directly with the inspecting and testing work of that company, particularly with the inspection and testing of rails and the investigation of rail failures and various tests of track fastenings. From 1908 to 1918 he was in charge of the physical testing laboratory. During the World War he was transferred to Washington, D. C., where he was in charge of the work done by his company in the inspecting and testing of the engineering materials and equipment for the American Expeditionary Forces. While in Washington he was commissioned a captain. At the close of the war, Mr. Morgan was appointed district manager of the Pittsburgh district of the Robert W. Hunt Company, with headquarters at Pittsburgh, Pa., which position he has held until his recent appointment.

A. E. Ostrander, assistant vice-president, sales department, of the American Car & Foundry Company, has been appointed foreign sales manager of the **American Car & Foundry Export Company**, with headquarters at New York. Mr. Ostrander began his career in the operating and mechanical departments of the New York, New Haven & Hartford where he served in various capacities for about nine years. He then resigned to design steel freight cars for Cornelius Vanderbilt. When Mr. Vanderbilt gave up this line of work due to illness, Mr. Ostrander became a designer for the Standard Steel Car Company. He entered the employ of the

American Car & Foundry Company in 1903, serving successively as estimator and designer, chief estimator, mechanical engineer and chief mechanical engineer until 1915 when he was appointed general mechanical engineer. In 1924 he was transferred to the sales department as assistant vice-president. During the war Mr. Ostrander was a member of the Standard Car Committee of the United States Railroad Administration and also collaborated with the



A. E. Ostrander

United States Ordnance Department in the building and designing of railway artillery and equipment. He is a past member of the Executive Committee, Railroad division, A. S. M. E., and has also served on several other committees of the society.

A. M. MacFarland, has been appointed general sales and development engineer of the **Lincoln Electric Company**, Cleveland, Ohio.

Obituary

Daniel Kennedy, president of the Kennedy Valve Manufacturing Company, died, after a short illness, at Hot Springs, Ark., on January 14, aged 80.

DECEMBER shipments of railroad locomotives, from principal manufacturing plants, based on reports received by the Department of Commerce, totaled 72 locomotives, as compared with 52 in November and 185 in December, 1926. Shipments for the year 1927 totaled 1,074 locomotives as compared with 1,755 for 1926. The following table gives details for 1927:

Year and Month	Shipments					Unfilled orders, end of month				
	Total	Domestic Steam	Domestic Electric	Foreign Steam	Foreign Electric	Total	Domestic Steam	Domestic Electric	Foreign Steam	Foreign Electric
January	126	91	11	22	2	653	506	53	52	42
February	163	101	22	38	2	572	442	60	30	40
March	162	146	11	4	1	780	635	50	54	41
April	151	122	12	1	16	713	580	44	60	29
May	140	105	14	12	9	726	585	46	72	23
June	159	133	11	12	3	667	522	53	72	20
July	132	82	20	30	..	555	445	36	51	23
August	124	78	16	23	7	525	455	26	28	16
September	134	109	13	5	7	498	386	24	77	11
October	151	124	15	12	..	390	286	20	71	13
November	128	109	15	3	1	517	391	27	84	15
December	185	152	17	5	11	398	297	14	79	8
Total (year) 1927	1,755	1,352	177	167	59	...	...	...	...	...
Total (year) 1926	1,074	726	148	171	29	...	...	...	...	...

Construction

CHESAPEAKE & OHIO.—A contract has been awarded to Haley, Chisholm & Morris, of Charlottesville, Va., for terminal facilities at Danville, W. Va. This project is to cost \$50,000.

CHICAGO & ALTON.—Plans have been prepared for the construction of a passenger station at Delavan, Ill., to be used jointly with the Illinois Central. Plans are in the course of preparation for the construction of an outlying passenger station at College Avenue, Alton, Ill.

CLEVELAND UNION TERMINALS.—Work will start on May 15 on the construction of the second section of the Terminal Tower building at Public Square, Cleveland, Ohio, as a part of a contract let to John Gill & Sons, Cleveland, in February, 1926. The cost of the second unit is estimated at \$3,500,000. It will consist of a 15-story brick, steel and concrete building with outside dimensions of 72 ft. by 120 ft.

GREAT NORTHERN.—A contract for the construction of foundations for an addition to the grain elevator at Superior, Wis., has been awarded to the Peppard & Fulton Company, Superior, Wis., and a contract for the construction of the superstructure has been let to the Barnett & Record Co., Duluth, Minn. The addition will consist of 240 concrete tanks, each with a capacity of 12,500 bu.; 110 ft. high and 13 ft. in diameter. With the enlargement of the warehouse and the installation of additional machinery the project is expected to involve an expenditure of more than \$800,000.

GREAT NORTHERN.—The Interstate Commerce Commission January 27 made public its third supplemental report in the Oregon construction case, authorizing the railroads involved to put into effect arrangements for the construction and operation by the Great Northern of a line between Bend and Klamath Falls, Ore., by making use in part of existing lines, as a substitute for the plan by which the Oregon Trunk was conditionally authorized by the commission to build a line between those points. The Oregon Trunk was unwilling to accept the conditions and the Great Northern asked an opportunity to substitute itself.

The commission has now issued a certificate authorizing the Great Northern to operate over the lines of the Spokane, Portland & Seattle, the Oregon Trunk and the Deschutes, between Wishram, Wash., and Bend, Ore., 151 miles, and another authorizing it to acquire an undivided three-fourths interest in the railroad and properties of the Shevlin-Hixon Company, having a line southerly from Bend about 25 miles, to construct an extension from its terminus to Chemult, Ore., 47 miles, and to operate over the Natron Cutoff line of the Southern Pacific between Chemult and Klamath Falls,

Authority also was granted to the Great Northern to acquire control, jointly with the Southern Pacific, of the Oregon, California & Eastern, by purchase of capital stock. The authority heretofore granted to the Oregon Trunk to construct and operate lines between Bend and Klamath Falls, is revoked and canceled, effective upon compliance by the Great Northern with the conditions imposed, in respect to the issuance of a certificate as an alternative to that previously issued to the Oregon Trunk. The conditions require the Great Northern to acquire the interest in the Shevlin-Hixon line within 30 days, to begin construction within 30 days and to complete it by December 31, 1928.

MISSOURI PACIFIC.—Bids will close on February 6 for the construction of 16.6 miles of railroad which will constitute the 1928 portion of the program of double tracking the main line between St. Louis, Mo., and Kansas City. This double tracking project includes the line between a point one half mile east of Allenton, Mo., and a point five miles west of Labadie, which is 17.6 miles long. The new main line will be constructed to shorten the distance between these two points by one mile. When this construction is finished, only 17 miles of single track will remain on the Missouri Pacific main line across the state of Missouri. Since 1924, when there were only 18.7 miles of second main track on the 129.4 miles of line between St. Louis and Cole Junction, Mo., there have been constructed 77 miles of double track at a cost of about \$9,115,500. The cost of the 1928 double tracking project is estimated at \$4,885,000, making the total expenditure for second main track on this line about \$14,000,000.

ST. LOUIS-SAN FRANCISCO.—A contract for the construction of two 100-ton reinforced concrete coaling stations, one at Pleasant Ridge, Ala., and the other at Magnolia, Ala., has been let to the Ogle Construction Company, Chicago.

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Boston & Albany Train at Huntington Avenue, Boston

Financial

ALABAMA GREAT SOUTHERN.—*Bonds Sold.*—J. P. Morgan & Co., the First National Bank of New York and the National City Company, announced an offering on February 1 of \$5,206,000, first consolidated mortgage 4 per cent gold bonds, series B, due December 1, 1943, at a price of 98¼ and interest, giving a yield of 4.15 to maturity. The proceeds of this issue will be applied to the retirement of \$5,200,000 of bank indebtedness incurred to provide funds for the payment at maturity on December 1, 1927 of \$1,749,000, first mortgage 5 per cent bonds £711,500 (\$3,457,890) general mortgage 5 per cent bonds.

BOSTON & MAINE.—*1927 Earnings.*—A preliminary earnings statement for 1927 shows net income after interest and other fixed charges of \$3,373,203, or an amount insufficient to cover the dividends on the prior preference and first preferred stocks. Net income in 1926 was \$6,573,404, equivalent after allowance for dividends on the prior preference, first preferred and preferred stocks to \$8.40 per share on the common stock. Selected items from the income statement follow:

	BOSTON & MAINE 1927	1926
RAILWAY OPERATING REVENUES		
Fares	\$77,848,374	81,625,376
Maintenance of way...	13,288,333	10,998,090
Maintenance of equip't.	14,889,500	15,189,191
Transportation	29,906,292	32,148,846
TOTAL OPERATING EXPENSES	61,835,502	62,355,456
Operating ratio.....	79.43	76.39
NET REVENUE FROM OPERATIONS	16,012,873	19,269,920
Railway tax accruals...	3,578,869	3,079,050
Railway operating income	12,436,597	16,177,840
Equip't rents, net Dr.	2,665,989	3,116,032
Joint facility rents, net Dr.	269,836	220,705
NET RAILWAY OPERATING INCOME	9,500,773	12,841,103
Non-operating income..	1,740,069	1,876,049
GROSS INCOME	11,240,841	14,717,153
Rent for leased roads..	1,139,132	1,139,132
Interest on funded debt	6,452,452	6,569,495
TOTAL DEDUCTIONS FROM GROSS INCOME	7,867,548	8,143,748
NET INCOME	3,373,293	6,573,404

CHESAPEAKE & OHIO.—*Acquisition of G. B. & E. Authorized.*—The Interstate Commerce Commission has authorized this company to acquire control of the Greenbrier & Eastern, an 11-mile coal road in West Virginia, by purchase of its capital stock and by lease. The stock has been purchased for account of the C. & O. by the Union Trust Company, of Cleveland at \$140.91 a share, and, because the C. & O. had not applied for authority to acquire control, the commission instituted an investigation. A proposed report by the commission's examiner severely criticized some features of the transaction and the commission's order contains a condition that the C. & O. shall not charge to its investment account an amount ex-

ceeding \$125 a share, plus \$12.79 per share representing the net current assets of the company, less \$38,663 representing a reserve for reparation, and shall not include \$31,200 or \$3.12 a share representing interest to be paid to A. B. Crichton president of the G. B. & E., who had sold the stock to the Union Trust Company. The report says that Crichton and his associates acquired a considerable portion of the 10,000 shares of Greenbrier stock from the former stockholders at prices ranging from \$75 to \$125 a share and that it was the understanding of some of the stockholders that their stock was to be turned over to the C. & O. at the prices received for it from him. Both Mr. Crichton and his brother, W. G. Crichton, secretary and treasurer of the company, appeared at the hearing in response to subpoenas but were not permitted to testify concerning their dealings in the stock after having refused to waive immunity.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Bonds.—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of \$865,000 first and general mortgage bonds, series B, to be held in the treasury subject to further order.

CHICAGO & NORTHWESTERN.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon a branch line extending 25 miles northwesterly from Antigo, Wis.

CHICAGO, ROCK ISLAND & PACIFIC.—Bonds Authorized.—The Interstate Commerce Commission has authorized this company to issue \$1,000,000 of general mortgage gold bonds, to be delivered to the corporate trustee under the first and refunding mortgage, and to procure the authentication and delivery of \$1,000,000 of first and refunding mortgage bonds, to be held in the treasury subject to the commission's further order.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to procure the authentication and delivery of, and to sell, \$1,100,000 of debenture gold bonds of 1930, to reimburse the treasury. It is proposed to sell the bonds at not less than 99.

CLEVELAND UNION TERMINALS.—Bonds Authorized.—The Interstate Commerce Commission has authorized an issue of \$5,000,000 4½ per cent first mortgage sinking fund bonds, series C, which the company proposes to sell at not less than 98 and interest. The proceeds are to be used to repay advances made by the proprietary companies and to assist in the construction of the new terminals, etc. The New York Central, the Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis have been authorized to assume obligation and liability as guarantors.

Bonds Sold.—J. P. Morgan & Co., First National Bank of New York and the National City Company announced an offering on February 2 of \$5,000,000 first

mortgage 4½ per cent sinking fund bonds, series C, at a price of 102 and interest giving a yield to maturity of 4.40 per cent. The issue is guaranteed by the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis.

ESCANABA & LAKE SUPERIOR.—Notes Authorized.—The Interstate Commerce Commission has authorized this company to issue \$208,350 of 5-year, 5½ per cent promissory notes to be exchanged at par for outstanding matured notes.

GREAT NORTHERN PACIFIC.—Merger Hearings.—Hearings before Charles D. Mahaffie, director of finance of the Interstate Commerce Commission on the proposed merger of the Great Northern and the Northern Pacific were resumed at St. Paul on January 30. Testimony in opposition to the unification plan was introduced by the Minneapolis & St. Louis. A. E. Smith, comptroller, testified that the merger will increase the difficulties under which the Minneapolis & St. Louis operates, as both the Great Northern and the Northern Pacific are strong competitors. He stated that the gross operating revenue of the Minneapolis & St. Louis increased 45 per cent between 1915 and 1926 while operating expenses increased 92 per cent. The net income dropped from \$2,331,360 in 1915 to \$187,693 in 1927, their operating expenses taking about 89 per cent of the gross receipts.

Following the adoption of a resolution by the city council of St. Paul opposing the merger, Arthur A. Stewart, corporation counsel sought to appear as an intervenor. The unification would have a detrimental effect upon the municipality through decreases in the railway payrolls in St. Paul.

While there can be no opposition in the matter of rates experience has shown that where there is actual competition for business between competing carriers, better service to the public is the result.

The hearing was adjourned February 1 to be resumed at Tacoma February 6.

INTERNATIONAL - GREAT NORTHERN.—Bonds Authorized.—The Interstate Commerce Commission has authorized an issue of \$5,518,000 first mortgage 5 per cent bonds, series C, of which \$5,500,000 are to be sold to Kuhn, Loeb & Co. at 99½, giving an average annual cost to the carrier of 5.033 per cent. The remaining \$18,000 are to be pledged as security for short term notes. The proceeds are to be used to repay bank loans, repay advances made by the Missouri Pacific and for other corporate purposes. The public offering by the bankers was made late last December.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—Bonds Authorized.—The Interstate Commerce Commission has authorized this company to issue \$17,000,000 first mortgage 4 per cent bonds, series A, for the purpose of paying off and retiring \$16,100,000 first consolidated mortgage bonds maturing on April 1, 1928. Such issue as necessary for this purpose is to be sold to J. P. Morgan & Co. at 94.84 and interest, giving an average annual cost

to the carriers of 4.25 per cent. The remainder of the issue is to be held in the treasury for future sale and the proceeds used for general corporate purposes.

NEW ORLEANS, TEXAS & MEXICO.—Bonds Authorized.—The Interstate Commerce Commission has authorized this company to issue \$5,989,000 first-mortgage 4½ per cent bonds, series D, of which \$5,900,000 are to be sold to Kuhn, Loeb & Co., at 95¾, giving an average annual cost to the carrier of approximately 4.775 per cent. The remaining \$89,000 are to be pledged as security for short term notes. The proceeds of the issue are to be used to supply cash to reduce the amount of unpaid vouchers, repay advances made by the Missouri Pacific, etc. The public offering of these bonds was made late last November.

NEW YORK, NEW HAVEN & HARTFORD.—Bonds Authorized.—The Interstate Commerce Commission has authorized this company to issue \$31,000,000 40-year first and refunding mortgage 4½ bonds, series of 1927 to be sold at not less than 89¼ and interest to J. P. Morgan & Co. At that price the annual cost to the carrier will be approximately 5.136 per cent. Part of the proceeds will be applied to retiring outstanding obligations amounting to \$27,147,298, and the remainder will be taken into the Company's treasury to reimburse it for indebtedness retired from other funds and will be used for general corporate purposes. The most important item in the indebtedness to be retired is a note of \$20,893,300, payable to the secretary of the treasury.

NEW YORK, SUSQUEHANNA & WESTERN.—Abandonment.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a branch line extending from a connection with its main line at Delaware Junction, to Delaware, 3.1 miles, in Warren County, N. J. The reason given is lack of traffic.

NORTHERN PACIFIC.—1927 Earnings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$18,538,424, equivalent to \$7.47 per share on the company's common stock. Net income in 1926 was \$21,002,732 or \$8.47 per share. Selected items from the income statement follow:

NORTHERN PACIFIC		
	1927	1926
RAILWAY OPERATING REVENUES	\$95,574,816	97,351,042
Maintenance of way....	11,965,278	12,297,403
Maintenance of equip't.	13,708,376	17,414,638
Transportation	31,902,292	32,291,965
TOTAL OPERATING EXPENSES	67,854,739	68,260,944
Operating ratio.....	71.00	70.12
NET REVENUE FROM OPERATIONS	27,720,078	29,090,098
Taxes and uncollect....	8,927,134	9,171,819
Railway operating income	18,792,944	19,918,278
Equip't rents, net Cr.	1,728,209	2,300,954
Joint facility rents, net Cr.	2,071,683	1,994,468
NET RAILWAY OPERATING INCOME	22,592,837	24,213,700
Non-operating income..	11,435,064	12,093,576
GROSS INCOME	34,027,901	36,307,276

(Continued on next page)

	1927	1926
Interest on funded debt	14,714,082	14,774,879
TOTAL DEDUCTIONS FROM GROSS INCOME	15,489,477	15,304,544
NET INCOME	18,538,424	21,002,732
Disposition of net income		
Dividends	12,400,000	12,400,000
Surplus for year carried to profit and loss	6,138,424	8,602,732

NORTHWESTERN PACIFIC.—Bond Application.—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$924,000 of first and refunding mortgage 4½ per cent bonds, the proceeds to be applied to the redemption of thirty-year first mortgage sinking fund bonds that mature on April 1. It is stated that competitive bids will be asked at not less than 95,2381 and that the Atchison, Topeka & Santa Fe and the Southern Pacific have expressed their willingness to bid that amount for equal amounts.

PULLMAN.—Protest Against Valuation.—This company has filed with the Interstate Commerce Commission a protest against the tentative valuation of its carrier property, as of 1919, in which the final value for rate-making purposes was placed at \$110,000,000. While the protest does not state a total claim it sets up in parallel columns the amount of the tentative final value, the commission's cost of reproduction new on the 1914 basis, \$156,867,654, the company's figure on the 1914 basis, \$209,981,517, and the company's figure for cost of reproduction new, without deduction for depreciation, on the 1919 basis, \$300,642,782. For its cars the company states the cost of reproduction new on the 1919 basis as \$236,482,207, and on the 1914 basis as \$152,087,982, as against the commission's figure of \$136,197,014, and the commission's final value of \$90,762,807. Objection is made to the commission's deduction of 10 per cent of the manufacturing cost of the cars.

SOUTHERN.—1927 Earnings.—A preliminary earnings statement for 1927 shows net income after interest and other fixed charges of \$21,699,908, equivalent after payment of the 5 per cent preferred dividends to \$14.40 per share on the common stock. Net income in 1926 was \$23,596,722, equivalent to \$17.16 per share on the stock then outstanding or to \$15.67 per share of stock outstanding at the present time. Selected items from the income statement follow:

SOUTHERN RAILWAY		
	1927	1926
Gross operating revenues	\$147,639,063	\$155,467,976
Total operating expenses	103,907,953	107,866,589
Net revenue from operation	\$ 43,731,109	\$ 47,601,387
Taxes and uncollectible railway revenue	9,488,877	10,394,891
Equipment and joint facility rents	1,477,170	1,677,713
Railway operating income	\$ 32,765,062	\$ 35,528,783
Other income	6,823,150	5,856,954
Total gross income	\$ 39,588,212	\$ 41,385,737
Interest and rentals	17,888,305	17,789,014
Income over charges for year	\$ 21,699,908	\$ 23,596,722
Dividends on preferred		

	1927	1926
stock	3,000,000	3,000,000
Balance after dividends on preferred stock	\$ 18,699,908	\$ 20,596,722
Equivalent per share of common stock to	\$1.40	\$15.67 *

* On basis of present capitalization.

SOUTHERN PACIFIC.—Bonds Sold.—Kuhn, Loeb & Co. announced an offering on January 31 of \$29,400,000 forty-year 4½ per cent gold bonds, due March 1, 1968, at a price of 99¼ and interest. The proceeds of the issue are to be applied to the redemption on May 1, 1928, of a like amount of collateral trust 5 per cent bonds, due May 1, 1944.

ST. LOUIS-SAN FRANCISCO.—Bonds Authorized.—The Interstate Commerce Commission has authorized this company to issue \$7,911,000 of prior lien mortgage, 5 per cent bonds, series B, and \$2,708,700 of prior lien mortgage 5½ per cent bonds, series D, to be pledged as collateral security for short term notes.

TEXAS & PACIFIC.—Equipment Trusts Sold.—The Guaranty Company of New York and Spencer, Trask & Co., have announced an offering of \$2,805,000 4½ per cent equipment trust certificates, series A, at yields ranging from 4.10 per cent to 4.25 per cent depending upon maturity.

Equipment Trust Application.—This company has applied to the Interstate Commerce Commission for authority for an issue of \$2,805,000 of 4½ per cent equipment trust certificates to be sold to the Guaranty Company of New York, the highest bidder, at 100.9512 and accrued dividends.

WHEELING & LAKE ERIE.—Bonds Authorized.—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of \$894,000 of refunding mortgage bonds, series B; to be held by the applicant until further order of the commission.

Average Price of Stocks and of Bonds

	Jan. 31	Last week	Last year
Average price of 20 representative railway stocks	118.73	120.18	102.77
Average price of 20 representative railway bonds	97.11	97.55	93.43

Dividends Declared

Bangor & Aroostook.—Common, \$.88, quarterly; preferred, \$1.75, quarterly, both payable April 1 to holders of record February 29.

Buffalo, Rochester & Pittsburgh.—Preferred, \$3.00, semi-annually; common, \$2.00, semi-annually, both payable February 15 to holders of record February 6.

Central of New Jersey.—\$2.00, quarterly, payable February 15 to holders of record February 6.

Delaware & Hudson.—\$2.25, quarterly, payable March 20 to holders of record February 27.

Green Bay & Western.—Capital stock, \$5.00, annually, payable February 6 to holders of record February 4. Income debenture A, \$50.00 on each \$1,000 certificates, annually; income debenture B, \$5.00 on each \$1,000 certificates, annually, both payable February 6.

Maine Central.—Common, \$1.00, quarterly, payable April 2 to holders of record March 15. Preferred, \$1.25, quarterly, payable March 1 to holders of record February 15.

Norfolk & Western.—Common, \$2.00, quarterly, payable March 19 to holders of record February 29.

Pennsylvania Railroad.—\$.87½, quarterly, payable February 29 to holders of record February 1.

Reading Company.—First preferred, 1 per cent, quarterly, payable March 8 to holders of record February 16.

Officers

Executive

W. C. Streit has been appointed assistant to the vice-president in charge of traffic of the Wabash, with headquarters at St. Louis, Mo., succeeding **F. G. Maxwell**.

W. H. King, Jr., assistant to the vice-president in charge of purchases of the Seaboard Air Line, with headquarters at Norfolk, Va., has been appointed assistant to the president, with the same headquarters.

O. H. Nance has been elected vice-president and general manager of the Canton Railroad, with headquarters at Baltimore, Md., and will have jurisdiction over all departments. Mr. Nance will also continue to hold his present position as president and general manager of the Maryland & Pennsylvania.

Samuel H. Church, vice-president and secretary of the Pennsylvania Railroad, Western lines, with headquarters at Pittsburgh, Pa., has retired under the pension regulations. A photograph and biographical sketch of Mr. Church's railway career appeared in the *Railway Age* of December 3, 1927, on page 1140.

Financial, Legal and Accounting

H. C. Barron has been appointed commerce attorney of the Atchison, Topeka & Santa Fe, with headquarters at Chicago.

Arthur Naylor, assistant treasurer and assistant secretary of the International Great Northern, with headquarters at Palestine, Tex., has been elected secre-



Arthur Naylor

tary and treasurer, with headquarters at the same point, succeeding **A. R. Howard** who retired under the pension rules of the company on January 1. Mr.

Naylor was born at Bradford, England, on December 25, 1879, and attended the public schools at Palestine, Tex. He entered railway service at the age of 17 years in the miscellaneous accounting department of the auditor's office of the International & Great Northern and in September, 1898, he was transferred to the treasury department. From September, 1900, to June, 1902, Mr. Naylor served in a clerical capacity in the stock claim department and he was then shifted to the office of the superintendent of the Ft. Worth division at Mart, Tex. He returned to the treasury department in August, 1903, as a clerk where he remained until September, 1911, when he was advanced to chief clerk at Palestine. In July, 1912, Mr. Naylor was promoted to cashier and 11 years later he was again promoted to assistant treasurer. In May, 1927, Mr. Naylor was elected assistant secretary, a position he held with that of assistant treasurer, until his election to secretary and treasurer which became effective on January 1.

C. C. Peterson has been appointed auditor of the Camas Prairie, with headquarters at Lewiston, Idaho.

James M. Souby, who has been promoted to valuation and commerce counsel of the Union Pacific, with headquarters at Omaha, Neb., was born at Karnes City, Tex., on August 10, 1882. He graduated from Vanderbilt University in 1908 and obtained his law degree from the same university two years later. Mr. Souby entered railway service on June 1, 1913, as commerce counsel



James M. Souby

on the Kansas City Southern, with headquarters at Kansas City, Mo., becoming solicitor of the same railroad on July 1, 1918, during federal control of the railways. On December 15, 1919, Mr. Souby was appointed assistant valuation and commerce counsel of the Union Pacific, with headquarters at Omaha, a position he occupied until his promotion to valuation and commerce counsel on January 12.

Walton J. Wright, who has been promoted to local treasurer of the Missouri Pacific, with headquarters at St. Louis, Mo., was born at Front Royal, Va., on October 27, 1869. He entered railway

service at the age of 18 years on the Missouri Pacific and until 1891 he served as agent and telegraph operator at various stations in Missouri and Kansas and as clerk in the local freight office at Memphis, Tenn. Mr. Wright was then advanced to traveling auditor, later becoming chief clerk of the station agents accounts division of the general auditing



Walton J. Wright

department. In October, 1909, he was promoted to auditor of freight receipts, with headquarters at St. Louis, where he remained until August, 1918, when he was appointed auditor for the United States Railroad Administration in charge of accounts of the Louisiana & Arkansas, with headquarters at Texarkana, Tex. Mr. Wright was appointed assistant auditor of the Missouri Pacific in March, 1920, and promoted to assistant general auditor, with headquarters at St. Louis, in 1926. He occupied the latter position until his promotion to local treasurer on January 1.

Operating

G. D. Wadsworth, general freight and passenger agent of the Quebec Central, with headquarters at Sherbrooke, Que., has been appointed assistant general manager, with headquarters at the same point.

J. H. Eddy has been appointed acting superintendent of terminals of the Southern Pacific lines in Texas and Louisiana, with headquarters at New Orleans, La., on account of the illness of **P. B. Torian**.

Effective February 1, mileage comprising the North, South, East, and West Florida divisions of the Seaboard Air Line was reassigned as follows: North Florida division—the mileage heretofore comprising the North and East Florida divisions, excepting Tampa Terminals; South Florida division—the mileage heretofore comprising the South and West Florida divisions and Tampa Terminals.

W. Rogers, telegraph and telephone engineer of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to joint superintendent of telegraph of the railroad and the Western Union Telegraph Company, with

headquarters at the same point, succeeding **June C. Browne** deceased.

H. R. Halverson, chief clerk to the superintendent of the Northern division of the Chicago Great Western at St. Paul, Minn., has been promoted to trainmaster on that division, with headquarters at the same point, succeeding **T. W. Saul**, who has resigned.

F. Whittemore, superintendent of safety of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been appointed assistant to the superintendent of transportation, with headquarters at the same point. The work of the safety first and freight claim prevention bureau has been consolidated with that of the superintendent of transportation.

C. H. Wright, who has been promoted to superintendent of the Southern division of the Kansas City Southern, with headquarters at Texarkana, Tex., entered the service of that railroad as a conductor on June 17, 1903. He remained as a conductor for the next eight years and on October 1, 1911, he was promoted to general yard master at Pitts-



C. H. Wright

burg, Kan. Later Mr. Wright served as trainmaster of the First and Second districts, and as inspector of transportation, with headquarters at Kansas City, Mo. On January 20, 1925, he was advanced to office assistant to the general superintendent of transportation, with headquarters at Kansas City, a position he held until his promotion to superintendent of the Southern division of the Kansas City Southern and its subsidiary, the Texarkana & Ft. Smith, on January 1.

Eric E. Wright, who has been promoted to superintendent of the Canada division of the Michigan Central, with headquarters at St. Thomas, Ont., was born on December 21, 1888, at Grand Island, Neb. He entered railway service on May 10, 1910, with the Michigan Central as a yard clerk at Michigan City, Ind., and two years later he entered the train service as a yard brakeman. Mr. Wright served in the latter capacity and as a yard conductor until January 1, 1916, when he was advanced to yardmaster at Michigan City. He

was promoted to general yardmaster at Michigan City on March 1, 1918, and for the next five years he served also successively as general yardmaster at Niles, Mich., and as trainmaster at Niles and at Michigan City. On April 16, 1923, Mr. Wright was promoted to assistant superintendent, with headquarters at Jackson, Mich., a position he held until his further promotion to superintendent of the Canada division on January 4.

Traffic

Carl H. Groninger has been appointed district freight agent of the Baltimore & Ohio, with headquarters at Huntington, W. Va.

F. G. Maxwell, assistant to the vice-president of the Wabash, with headquarters at St. Louis, Mo., has been appointed assistant general freight agent, with headquarters at the same point.

After February 1, all industrial and agricultural development work for the Norfolk and Western will be under the direction of **T. Gilbert Wood**, whose present title of agricultural agent, has been changed to industrial and agricultural agent, with headquarters at Roanoke, Va.

R. G. Amiot, district passenger agent of the Canadian Pacific at Montreal, Que., has been appointed general freight and passenger agent of the Quebec Central, with headquarters at Sherbrooke, Que. **G. C. Brooks** has been appointed assistant general freight agent and **W. E. A. Brooks** has been appointed assistant general passenger agent, both with headquarters at Sherbrooke.

C. M. Grubbs, general agent of the Northern Pacific at San Francisco, Cal., has been promoted to assistant general freight agent with headquarters at Seattle, Wash. **J. P. Roddy**, general agent at Los Angeles, Cal., has been transferred to San Francisco succeeding Mr. Grubbs. **W. H. Jaynes**, general agent at Vancouver, B. C., has been appointed export and import agent at Seattle.

J. D. Mason, general passenger agent of the Pacific lines of the Southern Pacific, with headquarters at El Paso, Tex., has also been appointed general passenger agent of the Texas and Louisiana lines, with headquarters at the same point. The jurisdiction of **H. D. McGregor**, assistant general passenger agent of the Pacific lines, with headquarters at El Paso, Tex., has also been extended to include the Texas and Louisiana lines.

Walter Shipley, traffic manager of the Mobile & Ohio, with headquarters at St. Louis, Mo., has been appointed general traffic manager, with headquarters at the same point. **E. B. Farrell**, assistant to the traffic manager, with headquarters at St. Louis, has been appointed freight traffic manager, with jurisdiction over the territory south of the Ohio river and west of the Mississippi river,

with headquarters as before. **J. G. Roysler**, northwestern freight agent, with headquarters at Chicago, has been appointed freight traffic manager, with jurisdiction over the territory north of the Ohio river and east of the Mississippi river, with headquarters at St. Louis.

Mechanical

L. S. Kurfess has been appointed assistant superintendent of the car department of the Erie, with headquarters at Hornell, N. Y.

Engineering, Maintenance of Way and Signaling

Elbert H. Dresser, formerly assistant engineer on the Duluth, Missabe & Northern, has been appointed chief engineer, with headquarters at Duluth, Minn., succeeding **William H. Hoyt**, deceased.

George H. Dryden, who has been appointed signal engineer of the Baltimore & Ohio, with headquarters at Baltimore,



George H. Dryden

Md., was born on February 15, 1870, at Rehobeth, Md. He attended public school and the Rehobeth Academy, and entered railway service on August 1, 1891, with the Baltimore & Ohio as laborer. From 1892 until 1897 he was a lineman and during the following year served as telegraph operator. Mr. Dryden then became signalman, holding this position until 1902, when he was appointed signal supervisor. During 1903 he served as signal inspector, and from 1903 until 1906 as general signal inspector. At the latter time he was appointed assistant engineer, remaining in this position until 1911, when he was appointed assistant signal engineer. In 1913 Mr. Dryden became principal assistant signal engineer, which position he was holding at the time of his recent appointment as signal engineer.

Purchases and Stores

The jurisdiction of **A. E. Walters**, division storekeeper on the Illinois Cen-

tral, with headquarters at Memphis, Tenn., has been extended to include all material and supplies of the mechanical and other departments on the Mississippi division, succeeding **G. D. Tombs**, who had headquarters at Water Valley, Miss., and who has been assigned to other duties.

Obituary

Edward Roberts Murphy, auditor of the Denver & Rio Grande from 1903 until his retirement in 1917, died on January 28, at Denver, Colo.

K. S. Hull, superintendent of the Gulf, Colorado & Santa Fe, with headquarters at Temple, Tex., died on January 30, in that city from wounds received when he was shot by a discharged employee, who then committed suicide.

Garrett B. Wall, vice-president of the Chesapeake & Ohio and the Hocking Valley, with headquarters at Richmond, Va., died unexpectedly in St. Augustine, Fla., on January 26, after a brief illness. Mr. Wall was born on April 6, 1870, at Covington, Ky., and was educated at the United States Naval Academy and at Washington and Lee University. He entered railway service in 1889 with the Chesapeake & Ohio, and until July, 1898, served consecutively as chief clerk in the offices of the assistant superintendent, superintendent, general superintendent and general manager. From July, 1898, until July, 1910, Mr. Wall was real estate and tax agent of the road, and then served as assistant to the president, of that road and of the Hocking Valley until December, 1917. From December, 1917, until 1919, he was vice president, same road, and from 1919 until March, 1920, during federal control, served as assistant federal manager of the Chesapeake



Garrett B. Wall

& Ohio. Since that time he has been vice-president of that road and of the Hocking Valley.

THE ST. LOUIS & O'FALLON has awarded a contract to the Ogle Construction Company, Chicago, for the installation of a signal track electric cinder and sand handling plant at East St. Louis, Ill.